

HITACHI

PA**No. 0158**

43FDX15B	DP15K
43FDX20B	DP15K
53FDX20B	DP15H
53SDX20B	DP15J

53SDX20BB* DP15J

SERVICE MANUAL

NTSC**DP15K/DP15H/DP15J
Chassis****R/C: CLU-4322UG**

This addendum is partly due to the change in convergence adjustment from Digital Array of 43FDX10B to the use of 8 sensors Magic Focus of 43FDX20B. The Remote Control is also changed from CLU-5711TSI and CLU-5713TSI to CLU-4322UG. This addendum includes all information necessary for the 43FDX20B, 53FDX20B, 43FDX15B, 53SDX20B, and 53SDX20BB, EXCEPT information that is the same as the 43FDX10B, 43FDX11B, 53UDX10B and 61UDX10B. For this information, please refer to Service Manual PA No. 0146 issued in May 2001.

*** 53SDX20BB does NOT have a removeable lightbox**

Additionally, this Addendum includes Circuit Diagrams, Printed Circuit Boards and Parts List previously not included in Service Manual PA No. 0146.


CONTENTS

SPECIFICATIONS	2
GENERAL INFORMATION	3
REMOTE CONTROL	4
DISPLAY PICTURE FORMATS	5
SERVICE ADJUSTMENTS	13
BASIC CIRCUIT DIAGRAM	41
PRINTED CIRCUIT BOARDS	43
REPLACEMENT PARTS LIST (Updated 6/03/03)	45
DISASSEMBLY INSTRUCTIONS	50
PWB Part Numbers Added	62

CAUTION: Before servicing this chassis, it is important that the service technician read the "Safety Precaution" and "Product Safety Notices" in the related service manual.

SAFETY NOTICE

USE ISOLATION TRANSFORMER WHEN SERVICING

Components having special safety characteristics are identified by a  on the schematics and on the parts list in this Service Data and its supplements and bulletins. Before servicing the chassis, it is important that the service technician read and follow the "Safety Precautions" and "Product Safety Notices" in the related Service Manual.

PROJECTION COLOR TELEVISION

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

FEBRUARY 2002**HHEA-MANUFACTURING DIVISION****Version 0158.02**

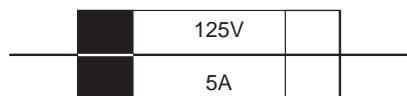
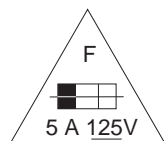
SPECIFICATIONS

Model:	53SDX20BB	53SDX20B		
	53FDX20B	43FDX20B		
	43FDX15B			
Cathode-Ray Tube:				
53FDX20B	R=P16LXL00RFA(U)			
53SDX20B	G=P16LXL00HHA(U)			
53SDX20BB	B=P16LXL00BMB(U)			
43FDX20B	R=P16LXS00RFA			
43FDX15B	G=P16LXS00HHA			
	B=P16LXS00BMB			
Power Input:	120 volts AC, 60 Hz			
Power Consumption:				
• Stand-By Power				
43FDX20B/43FDX15B 2.7W			
53FDX20B/53SDX20B/53SDX20BB 2.7W			
• Power Consumption (operating)				
43FDX20B/43FDX15B 225W			
53FDX20B/53SDX20B/53SDX20BB 216W			
• Power Consumption (maximum)				
43FDX20B/43FDX15B 265W			
53FDX20B/53SDX20B/53SDX20BB 253W			
Antenna Impedance:	75 Ohm Unbalanced VHF / UHF / CATV			
Receiving Channel:	<u>BAND</u>	<u>CH</u>		
	VHF	2~13		
	UHF	14~69		
	EXT. Mid	(A-5)~(A-1), 4+		
	CATV Mid.	A~I		
	CATV Super	J~W		
	CATV Hyper	(W+1)~(W+28)		
Intermediate Frequency:	Picture I-F Carrier 45.75 MHz Sound I-F Carrier 41.25 MHz Color Sub Carrier 42.17 MHz			
Video Output:	1 Volt p-p, 75 ohm			
Audio Input:	470 mVrms, 47 k Ohm			
Stereo Audio Output:	470 mVrms, 1 k Ohm			
Audio Output Power:	Front: 12 watts per channel at 10% distortion, 8 ohm Impedance. Max output – 15 watts.			
Anode Voltage:	30.2±0.2kv (1.32±0.2mA)			
Brightness:	43"	53"		
(white screen)	250cd/m ²	170cd/m ²		
Speakers:	2 Woofers - 5 inch (120 mm) round 2 Tweeters - 2 inch (50 mm) round			
Dimension:				
	43"	53"FDX	53"SDX20B	53"SDX20BB
Height (in.)	43 5/8	51 5/8	55 3/4	55 3/4
Width (in.)	38 15/16	46	46	46
Depth (in.)	20 1/16	25 1/4	25	26 1/4
Weight (lbs.)	148	223	225	200
Circuit Board Assemblies:				
C.P.T. (B) P.W.B.		Terminal A P.W.B.		
C.P.T. (G) P.W.B.		Terminal B P.W.B.		
C.P.T. (R) P.W.B.		VM P.W.B.		
Audio Out P.W.B.		Surround P.W.B.		
2H P.W.B.		Power Deflection P.W.B.		
Power Supply P.W.B.		Control P.W.B.		
Signal P.W.B.		Control Sub P.W.B.		
Convergence P.W.B.		Sensor Distribution P.W.B.		

CIRCUIT PROTECTION

CAUTION: Below is an EXAMPLE only. See Replacement Parts List for details. The following symbol near the fuse indicates fast operation fuse (to be replaced). Fuse ratings appear within the symbol.

Example:



The rating of fuse F901 is 5A - 125V.
Replace with the same type fuse for continued protection against fire.

“RISK OF FIRE - REPLACE FUSE AS MARKED”

GENERAL INFORMATION

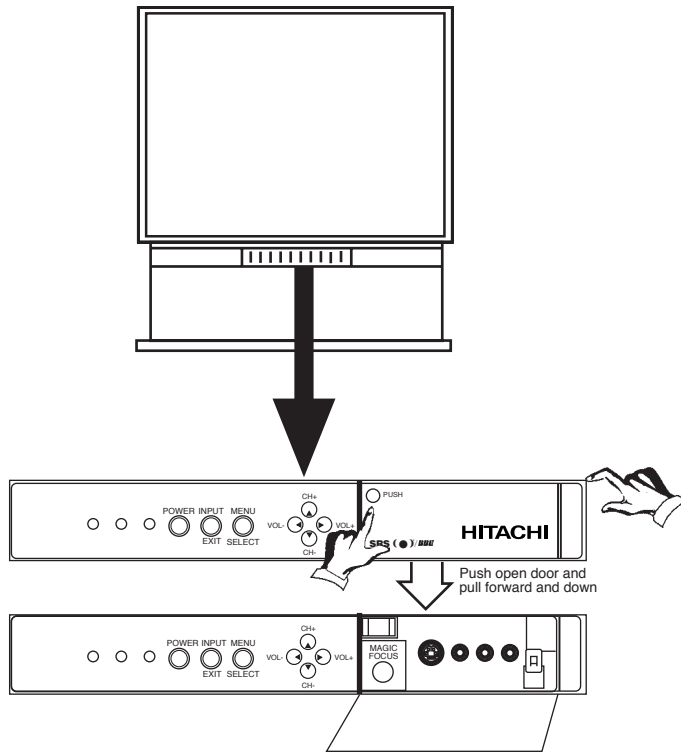


Fig. 3. Front Control Panel

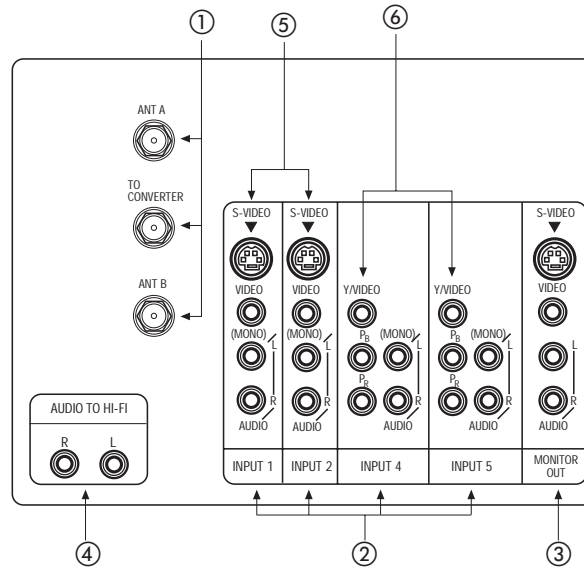
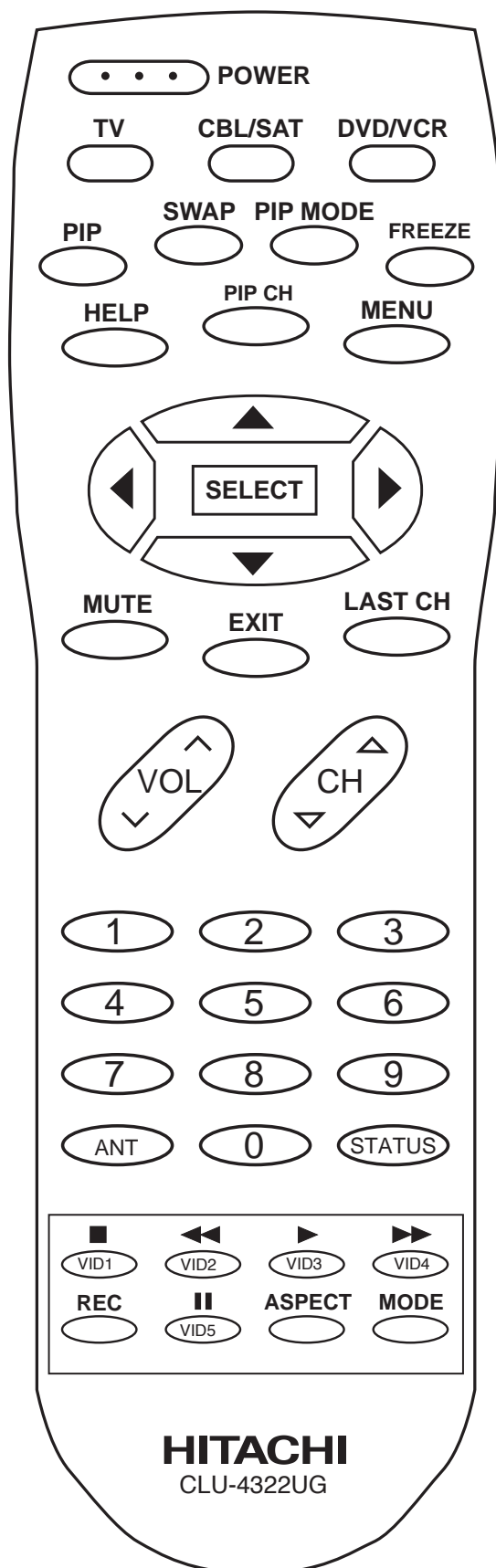


Fig. 4. Rear Panel Jacks

- ① Antenna Input/Output
- ② Audio/Video Inputs 1, 2, 4, 5
- ③ Monitor Out
- ④ Audio to Hi-Fi
- ⑤ S-Video Inputs 1 and 2
- ⑥ Component Input Y-P_BP_R



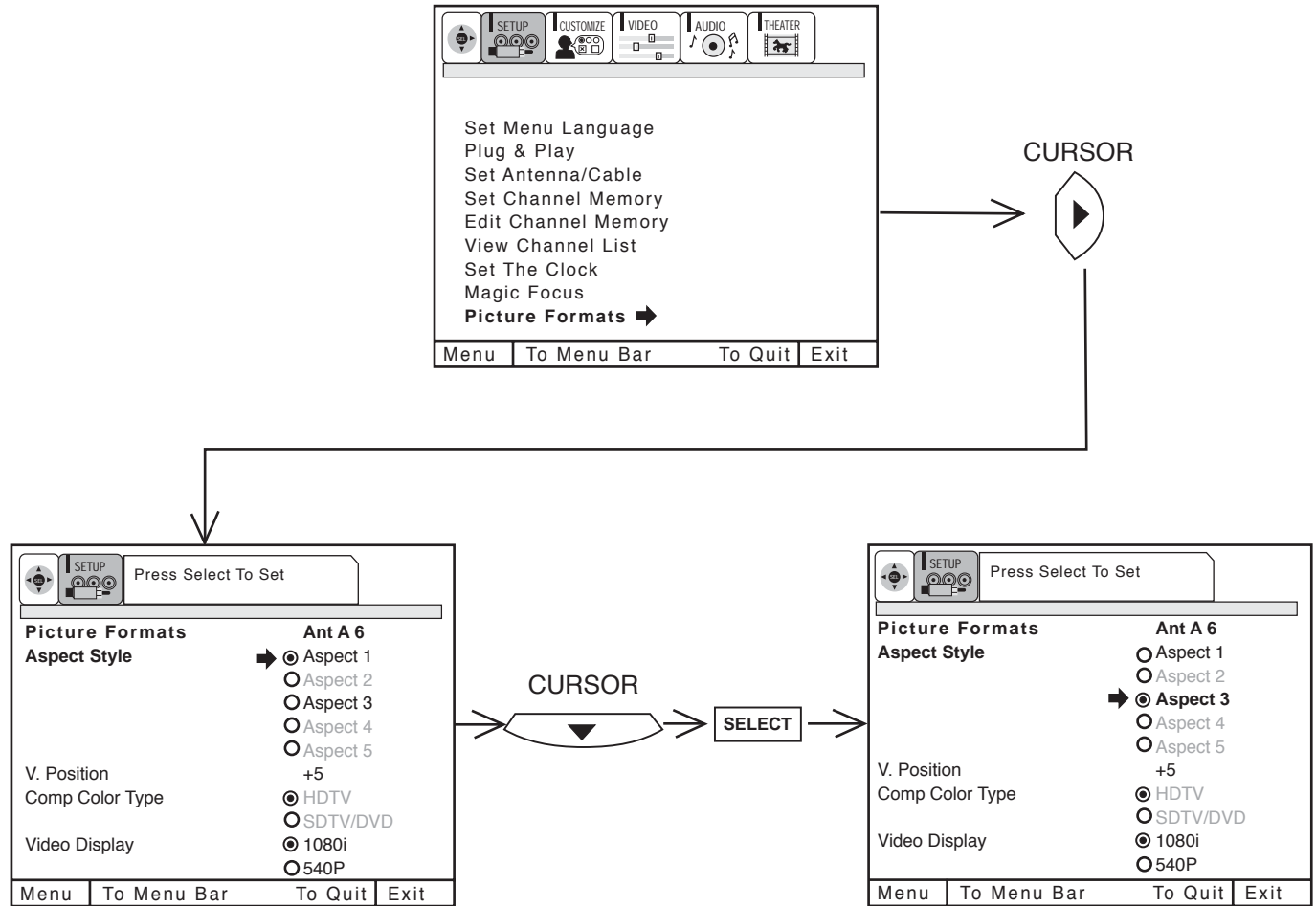
USE THE REMOTE TO CONTROL YOUR TV





PICTURE FORMATS

The PICTURE FORMATS function is very useful when setting up reception High Definition, Standard Definition and NTSC signals.



V. Position

Adjust this when viewing a COMPONENT: Y-P_BP_R signal. This feature is used to center an HDTV video signal between the top and bottom gray bars. Adjustable range is -10 (video center is toward bottom of screen) to +10 (video center is toward top of screen).

Press CURSOR ▲ or ▼ to highlight then press down on THUMB STICK to select.

Press EXIT to quit menu or CURSOR ◀ to return to previous menu.

NOTE:

- Depending on the input signal, some of the Aspect features will be grayed out. This means that the feature is not available with the signal input.
- Set up a Component Signal (connect component to Y-P_BP_R inputs) and switch to VIDEO: 4 or 5 by pressing the Video:4 or 5 button on the Remote Control when planning to use all Picture Formats feature.

Aspect 1 - Display the actual (normal 4x3 or 16x9) inputted signal mode.

Aspect 2 - Stretch the signal to 16x9 format.

Aspect 3 - Zoom in on Aspect 1 mode.

Aspect 4 - Zoom in on Aspect 2 mode.

Aspect 5 - When 1080i signal is inputted, this is the true 1080i signal.

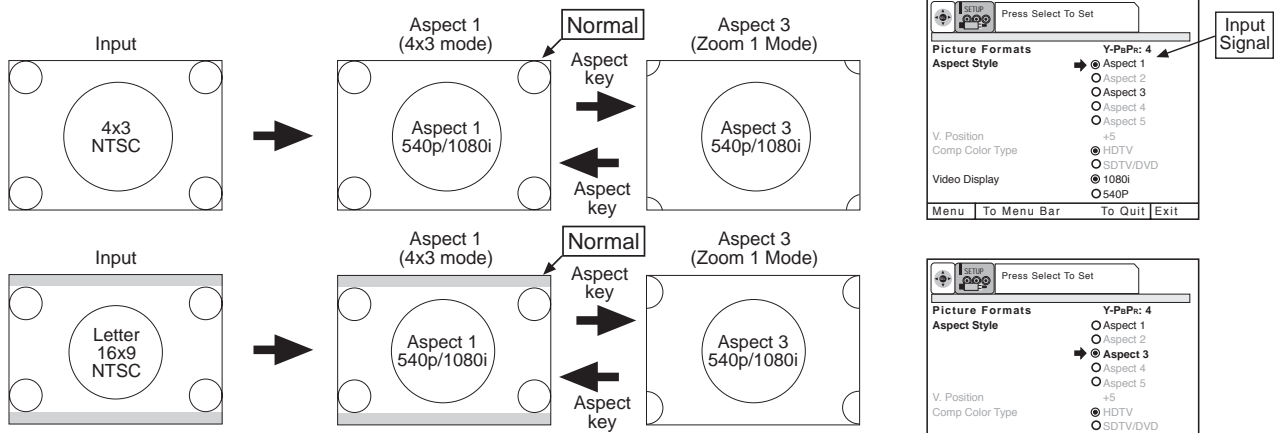
SET UP



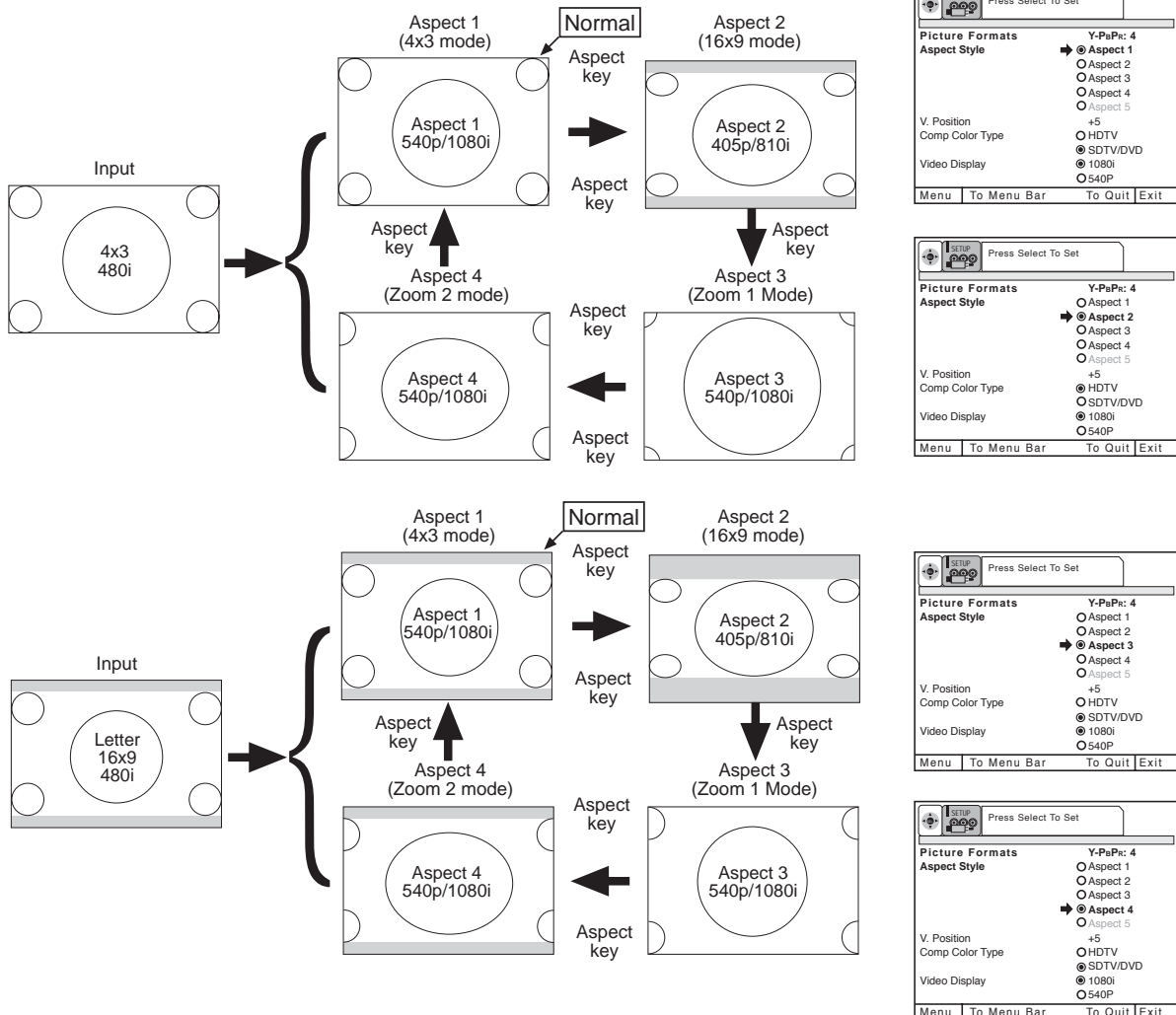
Picture Formats

Depending on the input signal, the PICTURE FORMAT aspect ratio allows you to adjust the image through the following options.

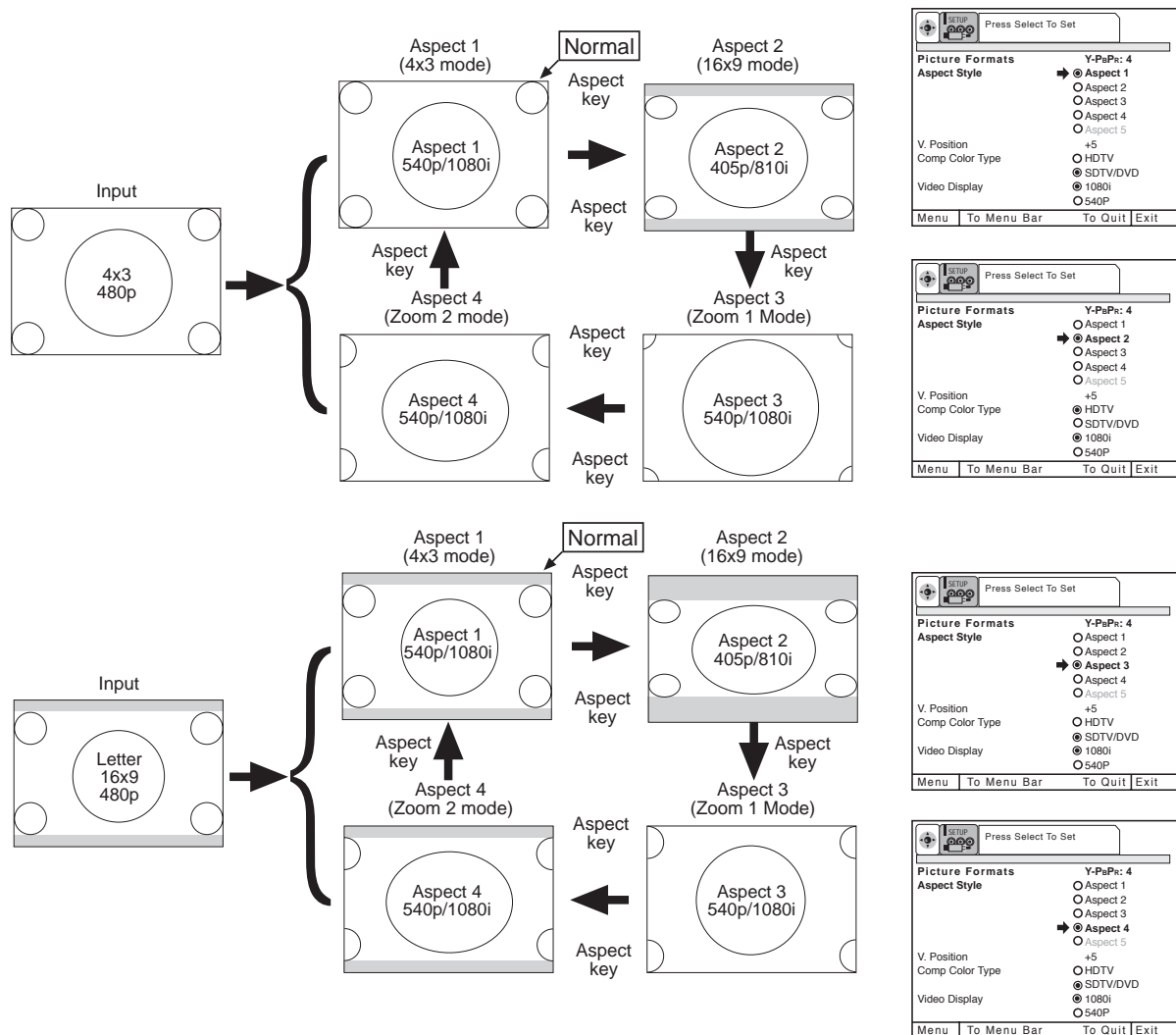
(1) NTSC Input - ANT A/B, VID1 ~ VID5, - 4x3 Format



(2) 480i Input - ANT A/B, Input 4/5 (Component) - 4x3 Format



(3) 480p Input - Input 4/5 (Component) - 4x3 Format



Comp Color Type

The Comp Color Type function allows you to automatically change tint and color coordinate for DTV Programs.

HDTV - High Definition Television - Use for High Vision Signal Y-P_BP_R from HDTV Set-Top Box.

SDTV /DVD - Standard Definition Television or Digital Video Disc Y-C_BC_R such as DVD (Digital Video Disc Player).

Video Display

The video display feature allows you to select between 1080i or 540P signal display.

- NOTE:**
1. If Comp Color Type is set improperly (does not match actual input signal), the color and tint of the main picture will be abnormal.
 2. You must be tuned to VIDEO: 4 or 5 input and have a component hooked up to the Y-P_BP_R input jacks to access all Picture Formats menu.
 3. All settings will affect only the component input you are currently viewing. If you are using both sets of component input jacks, be sure to set the Picture Formats feature for both inputs (set VIDEO:4 AND VIDEO:5).

DISPLAY FORMAT OF COMPONENT VIDEO TERMINAL (YCBCR/YPBPR).

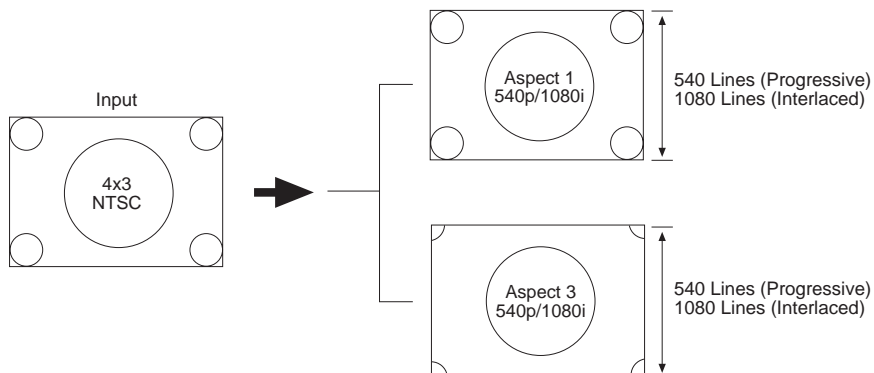
SDTV SIGNAL FORMAT: SMPTE-170M

HDTV SIGNAL FORMAT: ITU-R709, SMPTE-274M

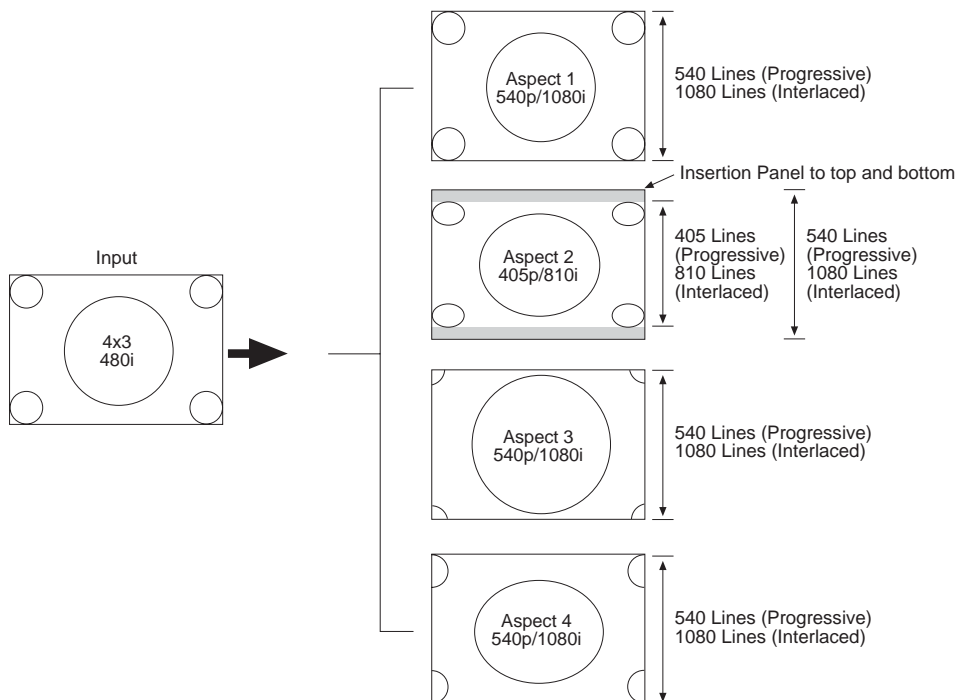
4X3 MODEL

1. NORMAL MODE

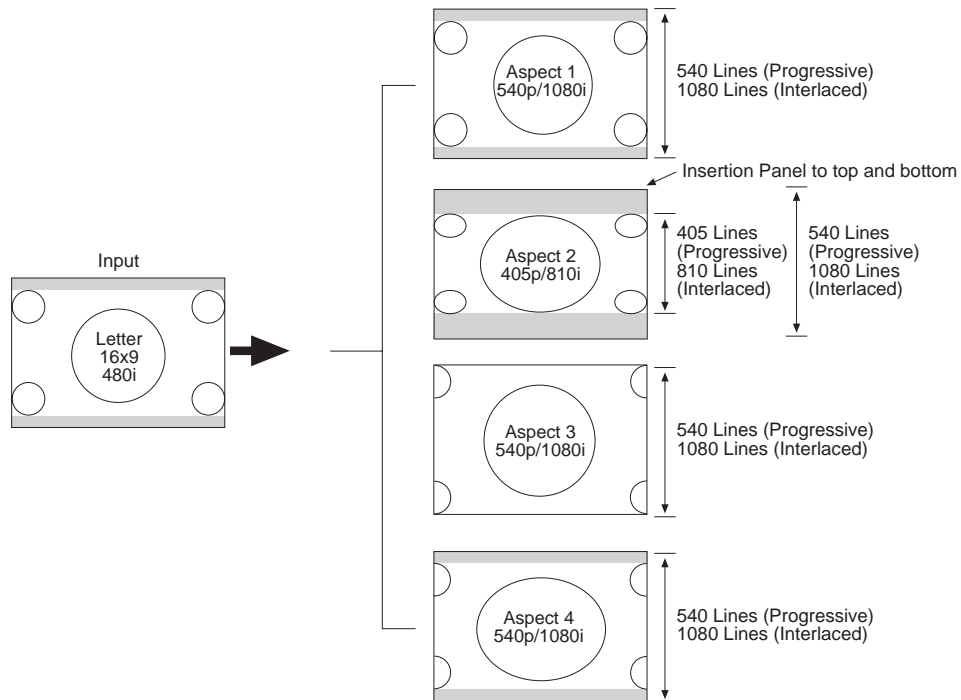
(1) NTSC: 480i 4x3 (15.75kHz) → 540P/1080i (33.75kHz)



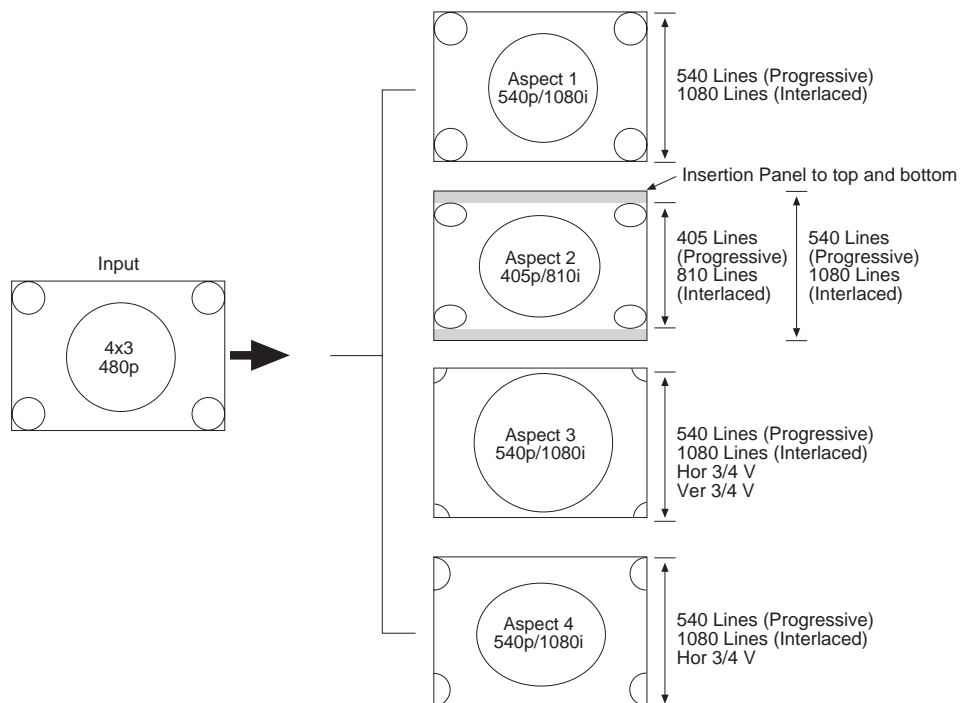
(2) SDTV: 480i 4x3 (15.75kHz) → 540P/1080i (33.75kHz)



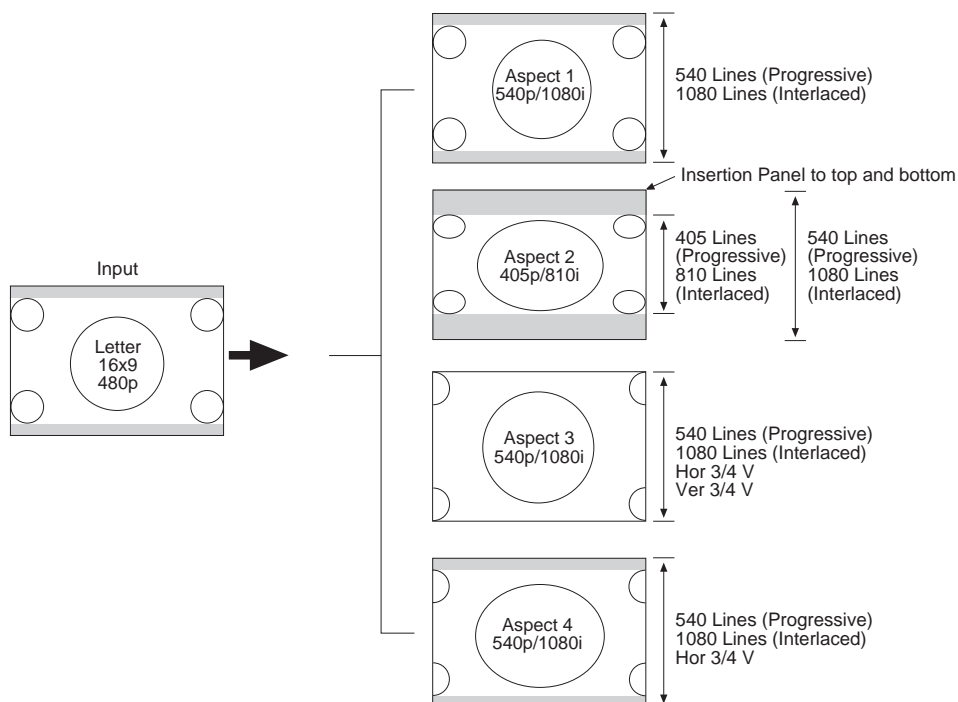
(3) SDTV: 480i 16X9 (15.75KHz) → 540P/1080i (33.75KHz)



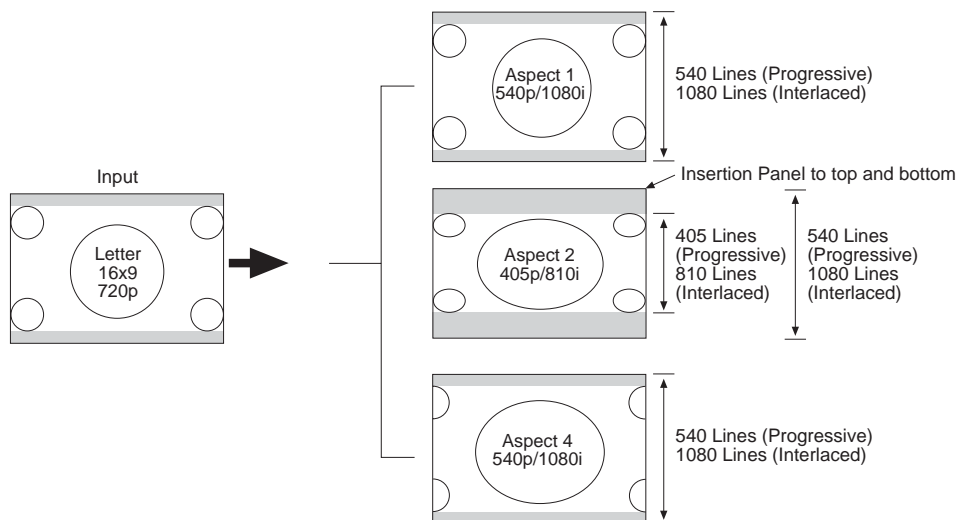
(4) SDTV: 480P 4x3 (31.5KHz) → 540P/1080i (33.75KHz)



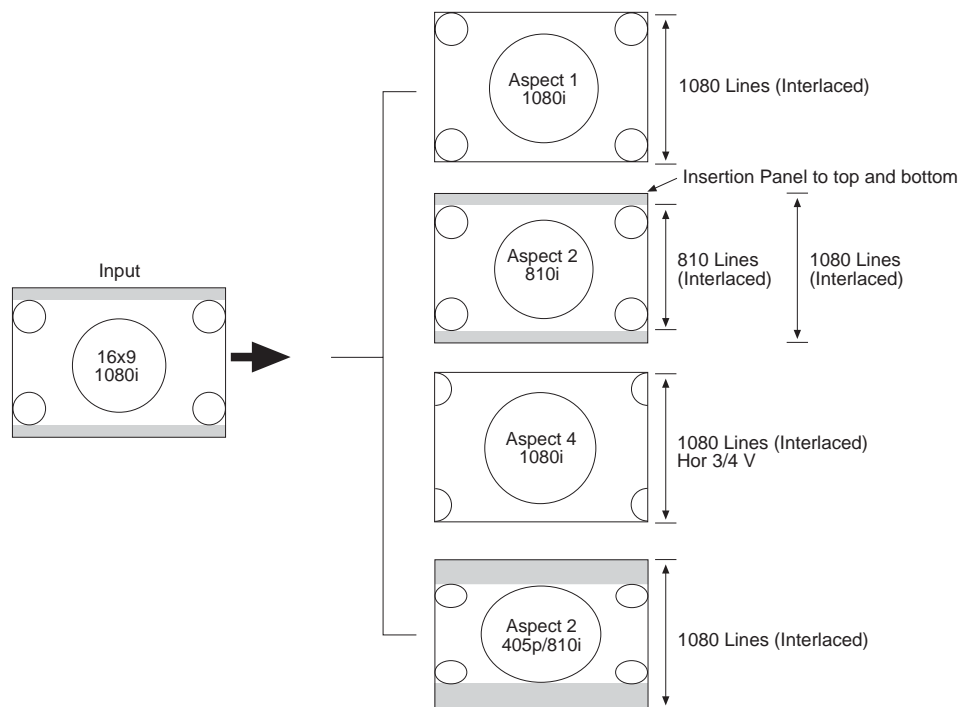
(5) SDTV: 480P 16X9 (31.5KHz) → 540P/1080i (33.75KHz)



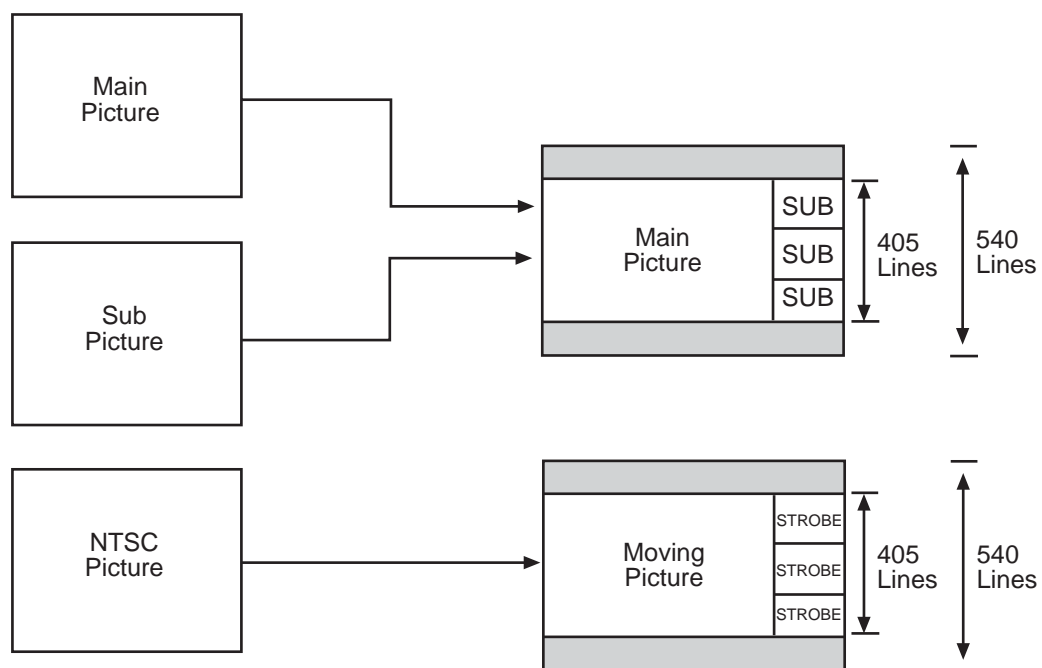
(6) HDTV: 720P 16x9 (33.75KHz) → 540P/1080i (33.75KHz)



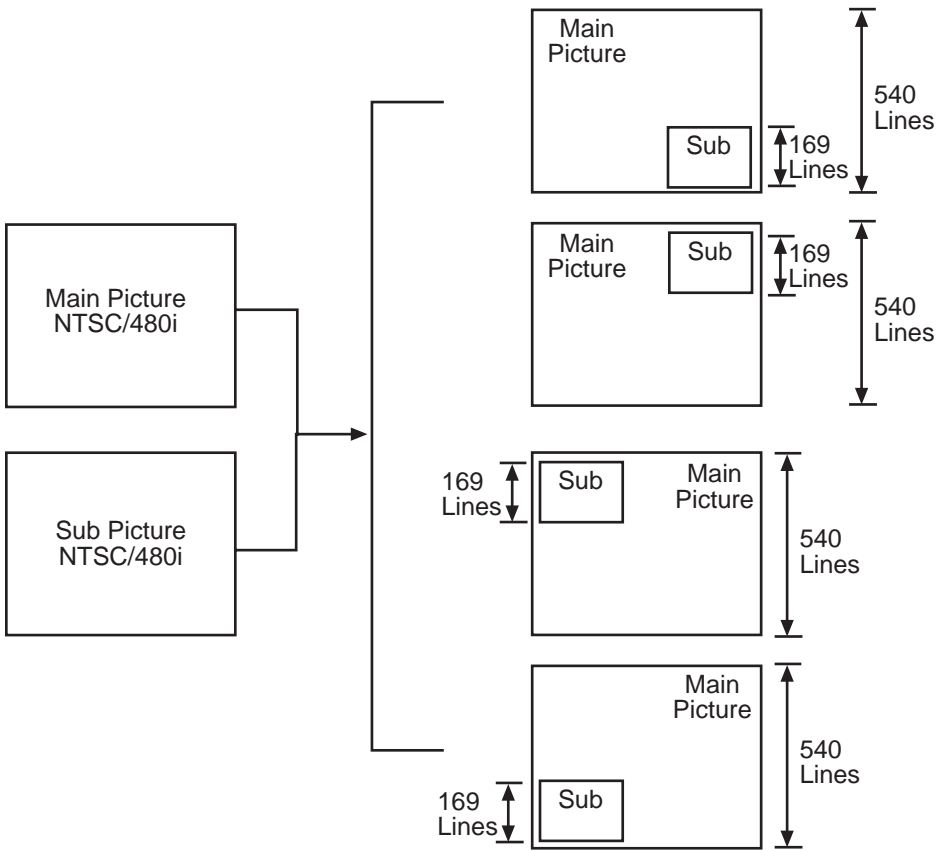
(7) HDTV: 1080i 16X9 (33.75KHz) → 1080i 4x3 (33.75KHz)



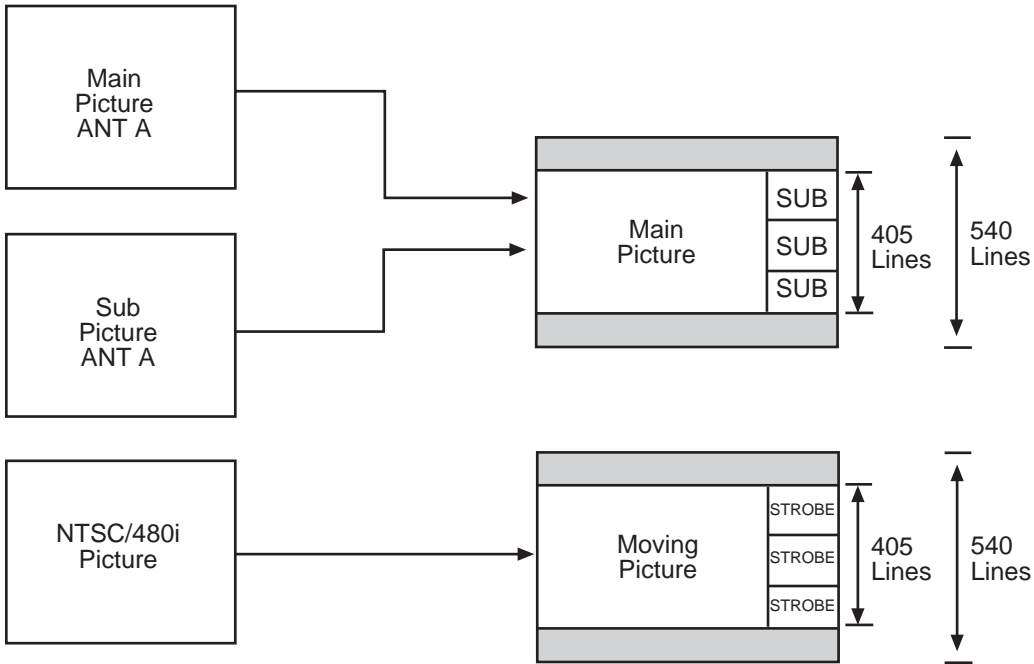
(8) Surf/Strobe Mode NTSC → 540P 4x3 (33.75KHz)



(9) Single Mode NTSC/480i → 540P 4x3 (33.75KHz)



(10) Surf/Strobe Mode NTSC/480i → 540P 4x3 (33.75KHz)



SERVICE ADJUSTMENTS

1. ASSEMBLED P.W.B ADJUSTMENT	14
1-1. Service Menu Access (NTSC, SDTV and HDTV)	14
1-2. Comb Filter Operation Check	22
1-3. Audio Operation Check	22
1-3-1. Tone Control Operation Check	22
1-3-2. Perfect Volume Operation Check	22
1-3-3. SRS Surround Operation Check	22
1-3-4. BBE Surround Operation Check	22
1-4. High Voltage Adjustment	23
 2. FINAL ASSEMBLY ADJUSTMENT (Adjustment should be according to below order)	23
2-1. Cut Off Adjustment.....	23
2-2. DCU Phase Data Setting (Normal and 1080i Throught mode)	23
2-3. Horizontal Position Adjustment (Coarse)	24
2-4. Raster Tilt (Deflection Yoke).....	24
2-5. Beam Alignment.....	24
2-6. Raster Position.....	25
2-7. Vertical Size (Normal Mode Only)	25
2-8. Horizontal Size (Normal Mode Only)	25
2-9. Beam Form	26
2-10. Lens Focus.....	26
2-11. Static Focus	28
2-12. Digital Convergence (Normal and 1080i Throught mode)	28
2-12-1. Magic Focus Character Set Up	29
2-12-2. Magic Focus Pattern Set Up	30
2-12-3. Convergence Jig Screen Specification	31
2-12-4. Raster Position Adjsutment	32
2-12-5. Convergence Point Adjustment	32
2-13. Blue Defocus	34
2-14. White Balance	34
2-15. Sub Brightness.....	35
2-16. Sub-Picture Signal Amplitude Adjustment	37
2-17. Horizontal Position (Normal and 1080i Throught mode)	38
2-18. Scanning Area Check (Normal and 1080i Throught mode).....	38
2-19. Raster Distortion Check (Normal and 1080i Throught mode)	39

***IMPORTANT**

For many of the above adjustments, it is necessary to have an HDTV (1080i or 720P) signal generator, SDTV (480P) signal generator, as well as the usual NTSC (480i) signal generator.

Hitachi recognizes that few companies offer HDTV or SDTV signal generators and that the cost of these generators is sometimes prohibitive. For this reason, we suggest the use of a set-top-box for HDTV and SDTV adjustments. Usually, there is a switch on the set-top-box which enables it to output HDTV (1080i or 720P) or SDTV (480P) signals even with no input. In this case, the sync is automatically detected by the TV (at the Y-P_BP_R Inputs on the rear panel).

1. ASSEMBLED P.W.B. ADJUSTMENT

1.1 Service Menu Access

Adjustment Procedure

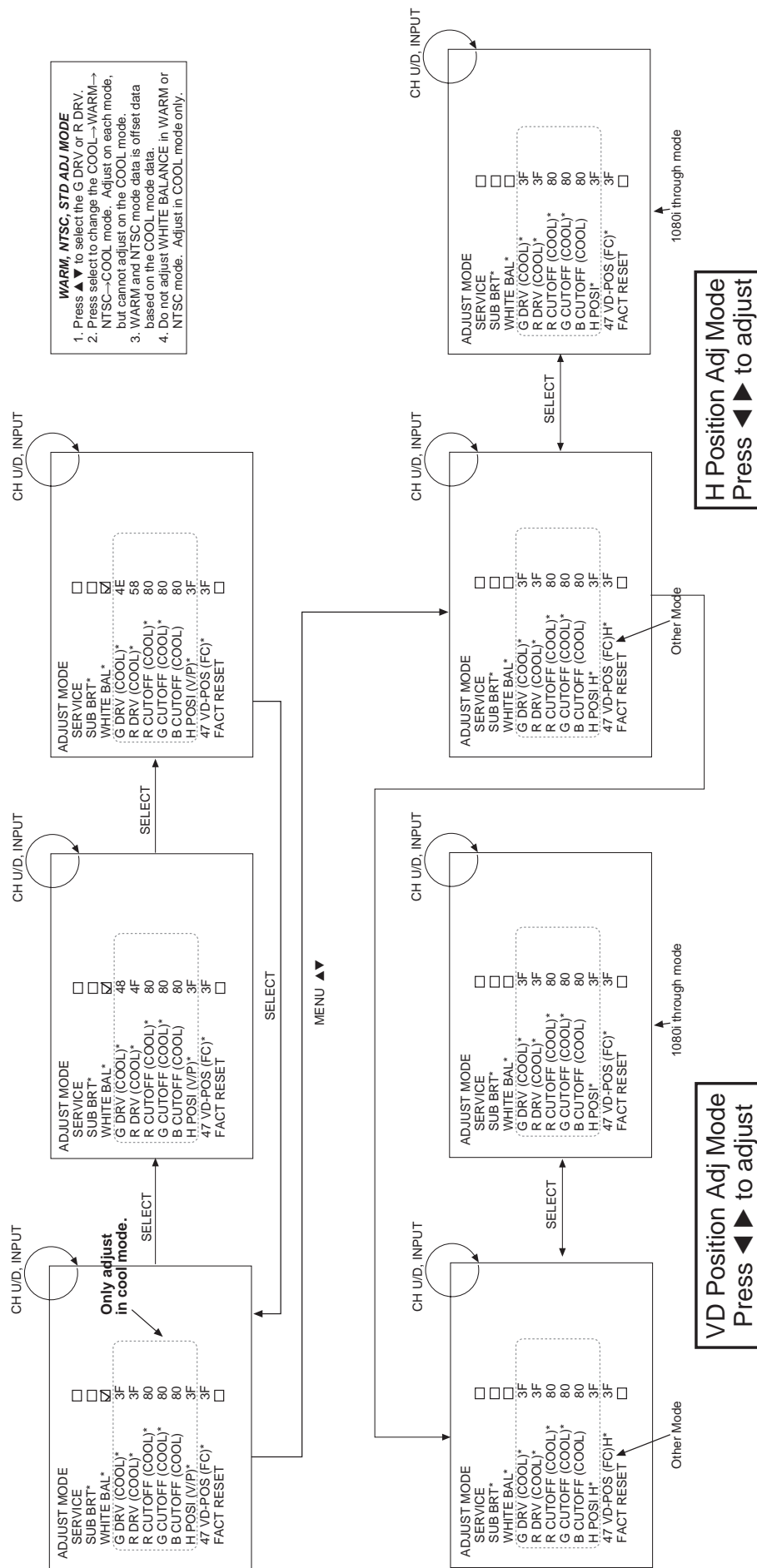
- (1) To access Service Menu press and hold INPUT key on Control Panel and then press POWER key on control panel to access I²C adjustment mode.
- (2) Receive signal on main picture. (NTSC, SDTV or HDTV).
Some menu pages have I²C adjustments for SDTV and HDTV. The set will automatically allow you to set these items only when a SDTV or HDTV signal is input to the COMPONENT jacks on the back of the TV. See table below.
- (3) Check the OSD according to table on pages 15~21, using CURSOR ▲, ▼ on Remote Control.
*: Adjustable Data
Others: Fixed Data (be careful not to change)
- (4) Press EXIT key to exit I²C ADJUST mode.

NOTE: (1) If the TV I²C data is different from the I²C Parameter (pages 15~21) for fixed data, change the data to match pages 15~21.
(2) When exchanging microprocessor or EEPROM and TV is turned on for first time, it requires initialization of Memory Initial of I²C adjustment menu.

(1) Adjust Mode OSD
Press INPUT + POWER
of control panel.



1.2 I²C Parameter List Cont.



Item **Device**

YUVSEL	CXA2141Q
3DYC	uPD64082
1HV/C	TA1270BF
FLEX	FLEX CONT.
2HV/P	TA1316AN
BBE	NJW1132

ADJUST MODE

YUVSEL RESET
3DYC RESET
1HV/C RESET
FLEX RESET
2HV/P RESET
BBE RESET
MEMORY INIT
IZCOPEN

Press ▲ ▼ to select.
Press ► to set to the initial data of each device.

Not used

Press ▲ ▼ to select.
Press ► for complete memory re-initialization

ADJUST MODE

UPD64082
DYGA 09
DCGA 06
VAPGA 00
VAPIN 0B
YHRCOR 00

ADJUST MODE

TA1270-M
TINT (TV) 3C
TOFF0 (TV) 00
TOFQ (TV) 00
SUB CNT* 0F
SUB CLR 0F

SPLIT/SINGLE MODE

3C 00 00 0F 0F

PIP CH

PIP Mode key

ADJUST MODE

TA1270-S
TINT (TV) 3C
TOFF0 (TV) 00
TOFQ (TV) 00
SUB CNT* 0F
SUB CLR 0F

ADJUST MODE

CXA2151
MAT OUT 0
H WIDTH 0
V TC 1
HSEP 0
HS MASK 1

ADJUST MODE

CXA2151
MACRO 1
GAIN SEL 0
CBGAIN 7
CRGAIN 7
YGAIN 7

ADJUST MODE

UPD64082
DYGA 09
DCGA 06
VAPGA 00
VAPIN 0B
YHRCOR 00

NORMAL mode

SINGLE mode (NTSC only)

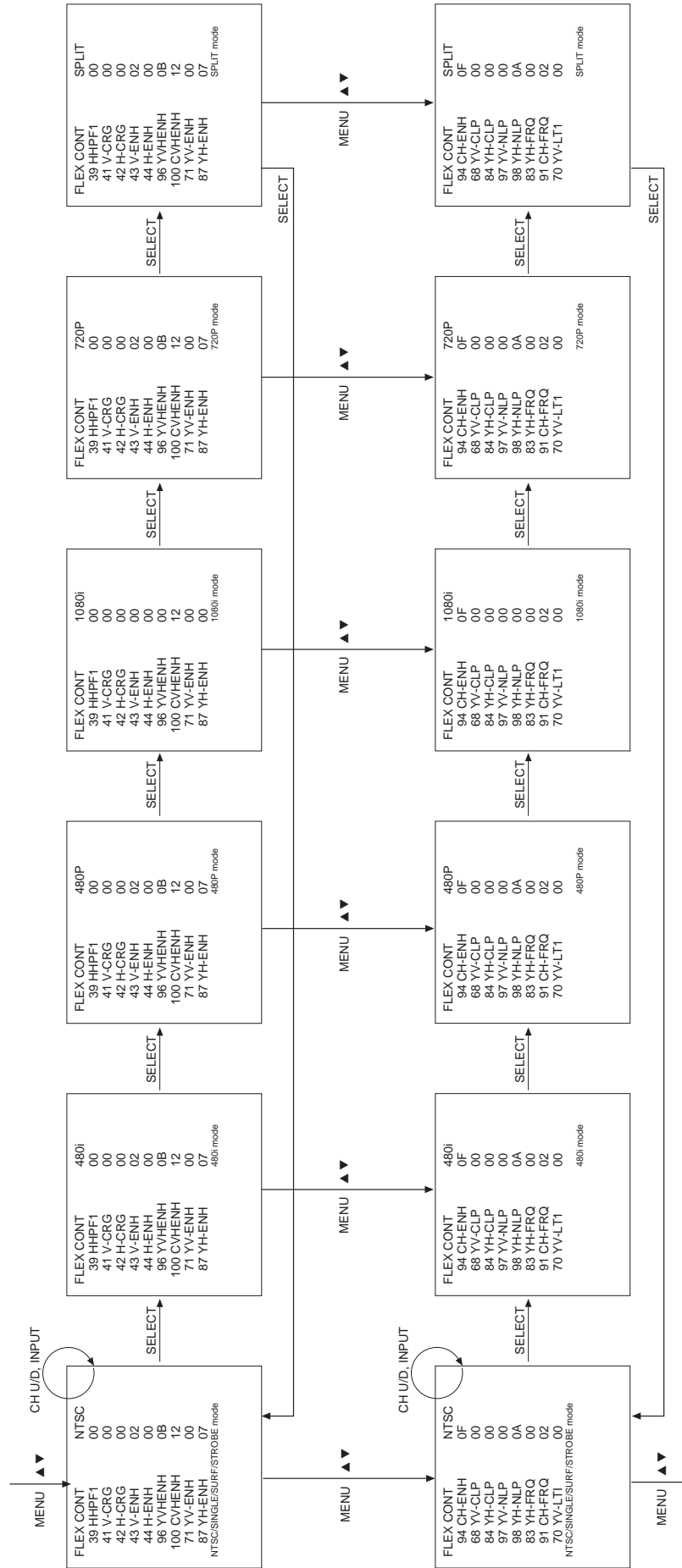
SPLIT mode

SURF mode (ANT A only)

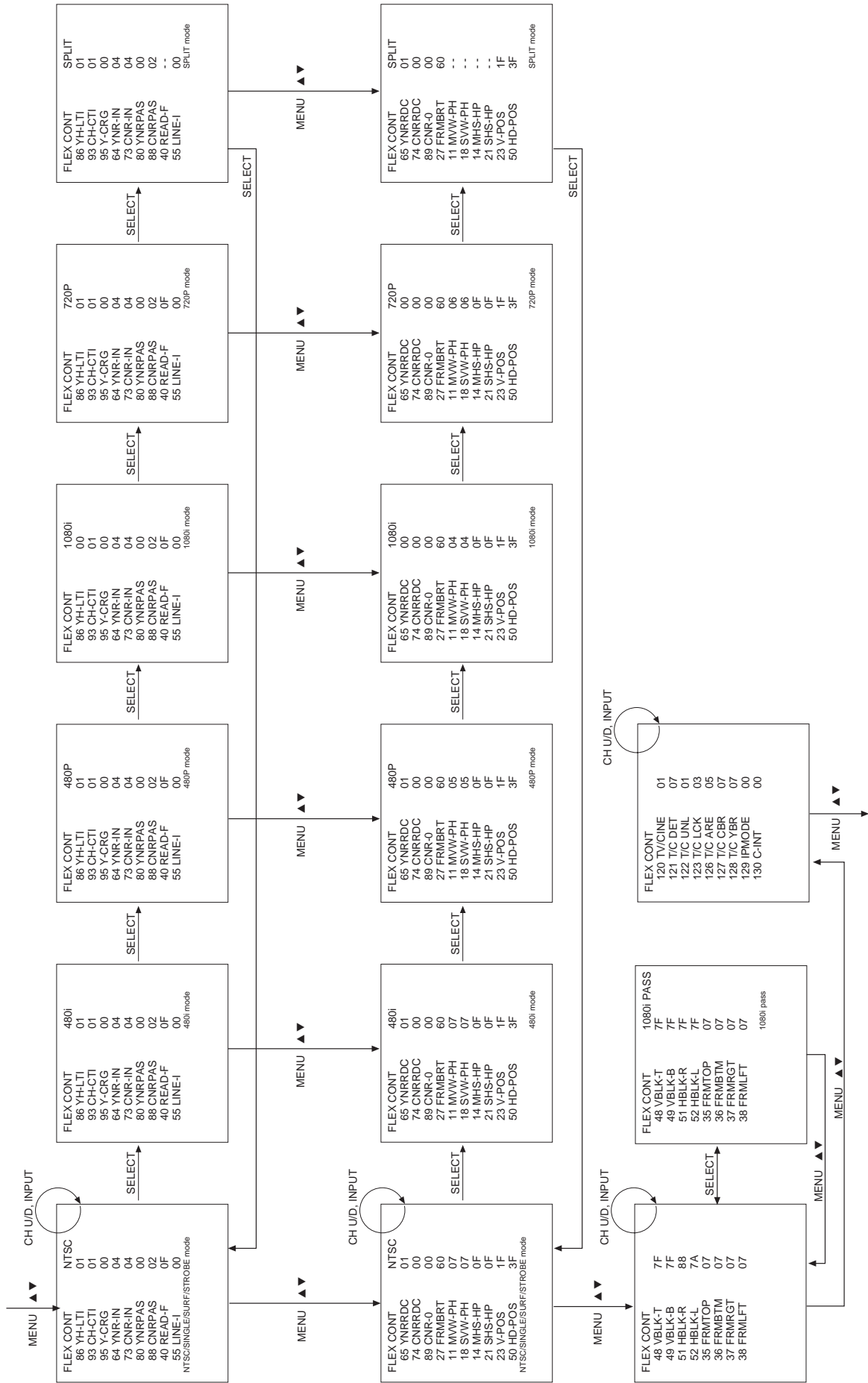
Same data of Main and Sub

17

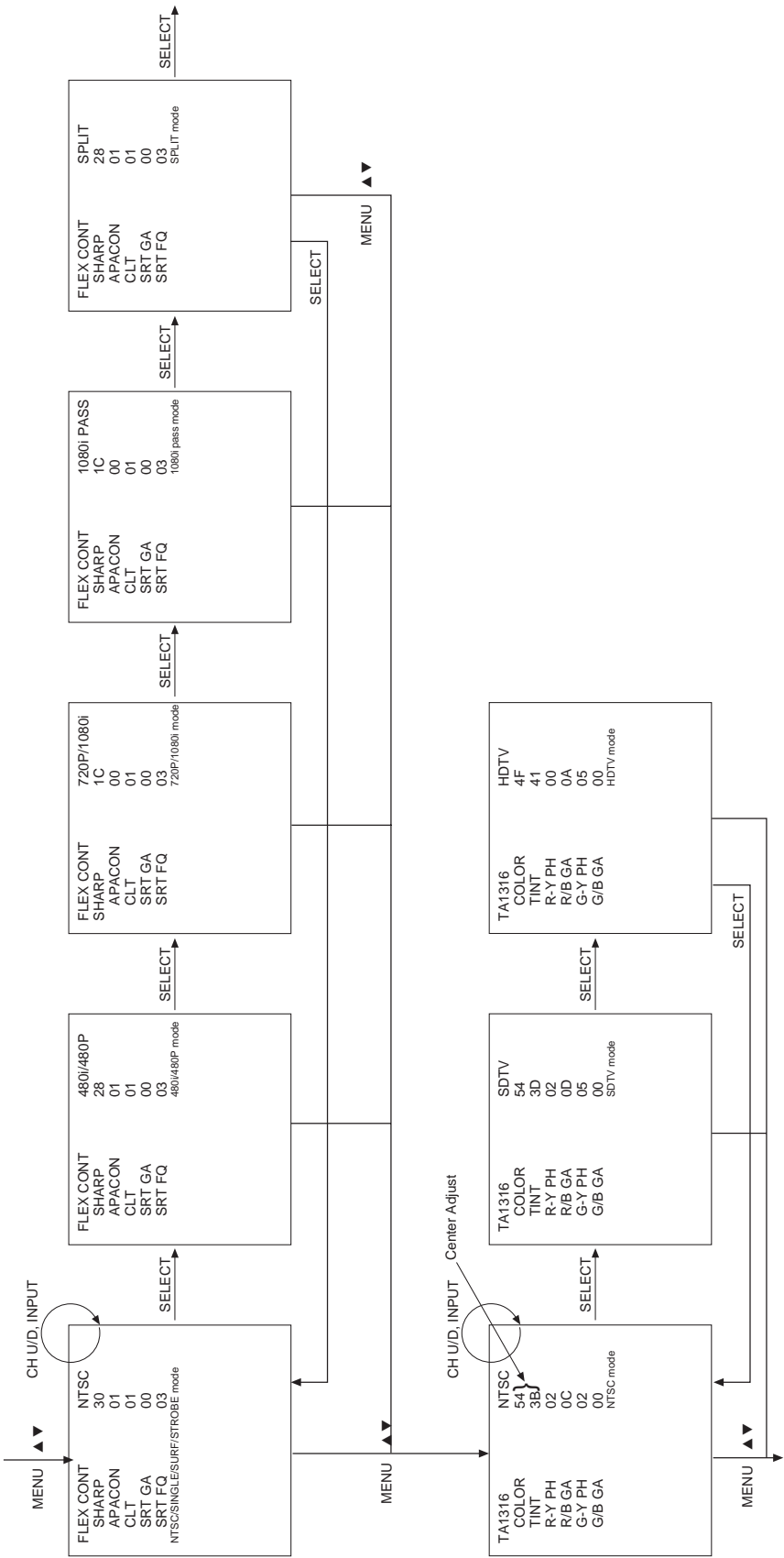
1.2 I²C Parameter List Cont.



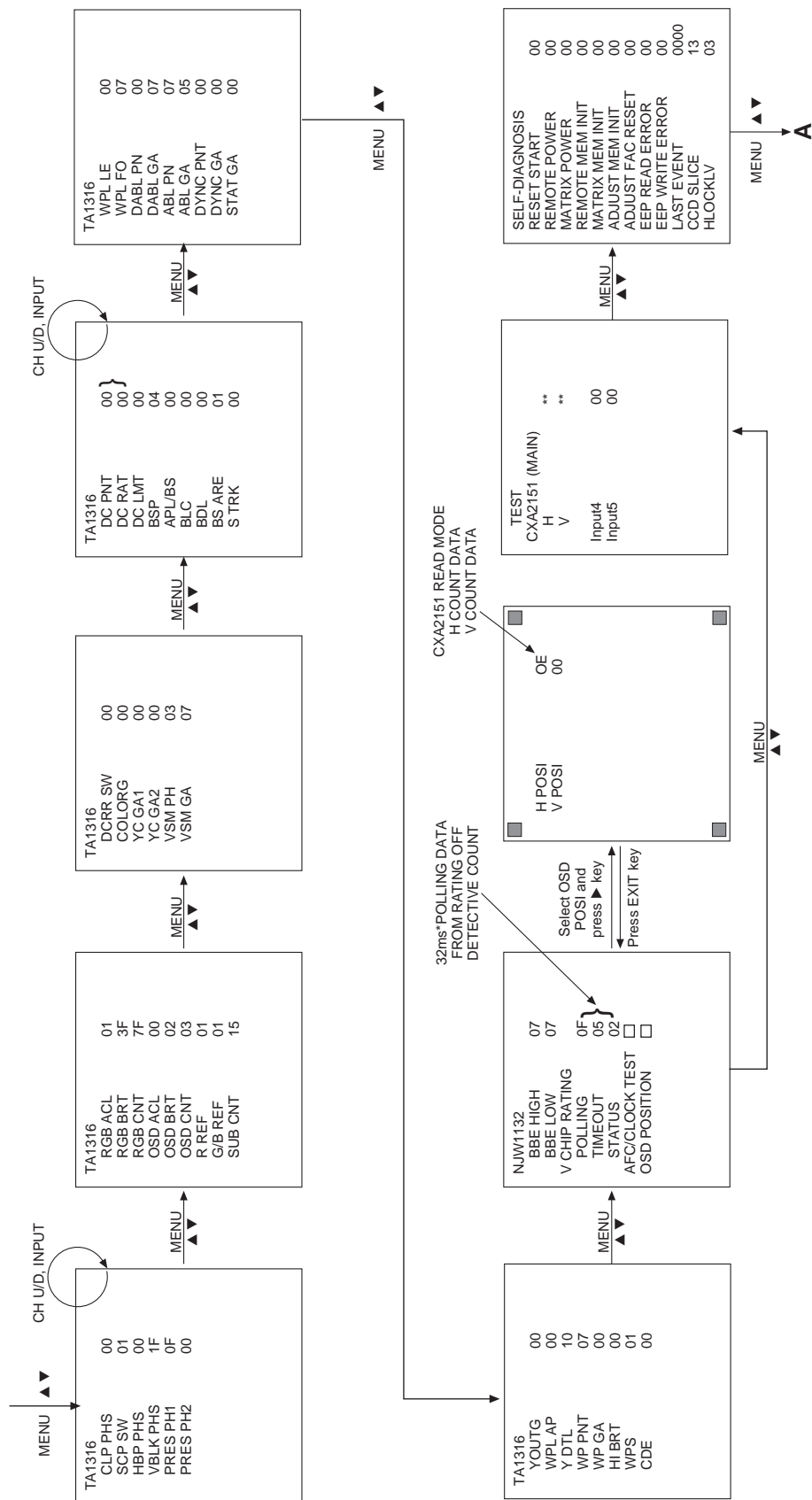
1.2 I²C Parameter List Cont.



1.2 I²C Parameter List Cont.



1.2 I²C Parameter List Cont.



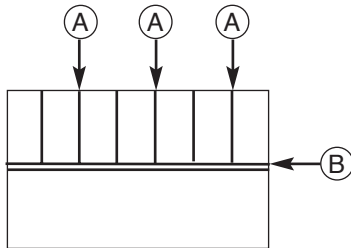
1.2 Comb filter operation check

Adjustment preparation

- (1) Receive the color bar signal at the regular tuning point.
- (2) Set the CONTRAST control to MAX and the other controls to center.
- (3) Set the PERFECT PICTURE to OFF.

Adjustment procedure

- (1) Check that between the color bars there are line dots every second color bar as shown in the drawing.



Check (A) and (B) line dots.

LINE	DOT
(A)	X
(B)	X

1.3 AUDIO OPERATION CHECK

1.3.1 TONE CONTROL OPERATION CHECK

Adjustment preparation

- (1) Input an audio signal of 250Hz and 3KHz in order with level of 150mVrms to the L/mono audio input.
- (2) Set the Volume to around the center.
- (3) Set SRS SURROUND to OFF.
- (4) Set LOUDNESS to OFF.
- (5) Set INTERNAL SPEAKER to ON.

Adjustment procedure

- (1) Select BASS mode and check that the audio output level of the speakers changes to emphasized or suppressed when adjusted to max. or min. of the adjustment mode.
- (2) Select TREBLE mode and check that the audio output level of the speakers changes by emphasized or suppressed when adjust to max. or min. of the adjustment mode.
- (3) Select BALANCE mode and check that the audio output changes right or left when adjusted to right or left of the adjustment mode.

1.3.2 PERFECT VOL. OPERATION CHECK

Adjustment preparation

- (1) Set PERFECT VOL. mode to on.
- (2) Set the Volume to around the center.
- (3) Set to SURROUND OFF.
- (4) Set INTERNAL SPEAKER to ON.

Adjustment procedure

- (1) Input 100mVrms, 200mVrms, 300mVrms and 400mVrms of 1KHz audio signal to L/Mono terminal.
- (2) Check that same level sound is output from SP when 200mVrms, 300mVrms and 400mVrms of 1KHz sound signal is input.

1.3.3 SRS SURROUND OPERATION CHECK

Adjustment preparation

- (1) Set the Master Volume to around the center. (Vol.30)
- (2) Set the BALANCE to the center.
- (3) Set the BASS and TREBLE to the center.
- (4) Set LOUDNESS to OFF.
- (5) Set PERFECT VOLUME to OFF.
- (6) Set INTERNAL SP to ON.
- (7) Set BBE to OFF.
- (8) Input the audio signal of 400Hz in order with level of 1Vpp to the R audio input and no signal to the L audio input.

Adjustment procedure

Check the following waveform at the HiFi out.

Output	SRS	
	ON	OFF
HiFi L out	4.2±0.5Vpp 	No signal
HiFi R out	5.0±0.5Vpp 	1.8±0.5Vpp

1.3.4 BBE SURROUND OPERATION CHECK

Adjustment preparation

- (1) Set the Master Volume to around the center. (Vol.30)
- (2) Set the BALANCE to the center.
- (3) Set the BASS and TREBLE to the center.
- (4) Set LOUDNESS to OFF.
- (5) Set PERFECT VOLUME to OFF.
- (6) Set INTERNAL SP to ON.
- (7) Set SRS to OFF.
- (8) Input the audio signal of 100Hz in order with level of 1Vpp to the R audio input and 10kHz in order with level of 1Vpp to the L audio input.

Adjustment procedure

Check the following waveform at the HiFi out.

Output	BBE	
	ON	OFF
HiFi L out	0.4±0.05Vpp 	0.2±0.05Vpp
HiFi R out	0.4±0.05Vpp 	0.2±0.05Vpp

Important: High Voltage adjustment should NOT be adjusted in field. This is adjusted at factory using precise loads and should NOT be readjusted.

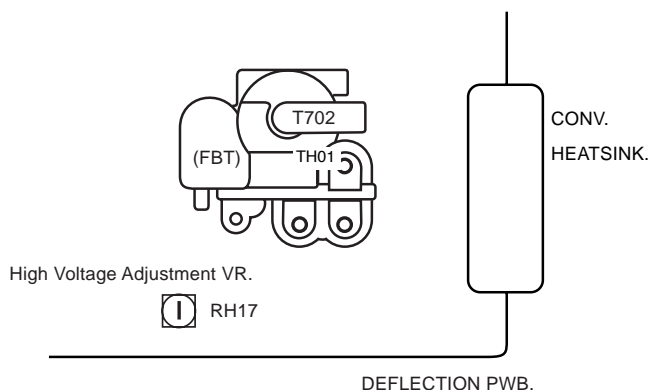
1.4 High Voltage Adjustment (should NOT be readjusted in field).

Adjustment preparation

- (1) Connect High Voltage meter to FBT High Voltage output. Connect GND of High Voltage meter to CPT GND or FBT GND.
- (2) Check that High Voltage adjustment VR (RH17) is set to mechanical center. (located behind FBT on DEFLECTION PWB).
- (3) Receive circle pattern signal.
- (4) VIDEO control should be reset.

Adjustment procedure

- (1) Adjust High Voltage to following spec. by turning VR RH17 slowly. ADJ. SPEC = $30.2 \pm 0.2\text{kV}$
- (2) After adjustment, fix VR RH17 with Silicone glue (KE40RTV).

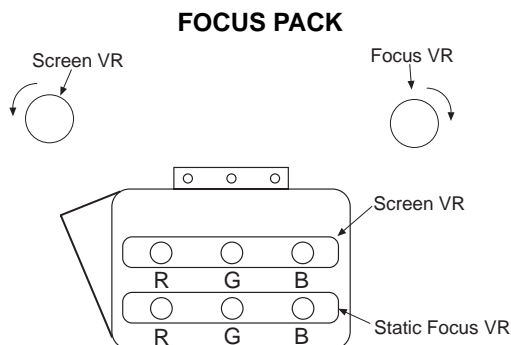


2. FINAL ASSEMBLY ADJUSTMENT

2.1 Cut Off Adjustment

Adjustment preparation

- (1) Adjust screen VR's on Focus Pack fully counterclockwise.
- (2) Adjust Focus VR's on Focus Pack fully clockwise.
- (3) Set video conditions to factory preset.
- (4) The vertical incident illumination on the screen should be 20 lux or less (room should be dark).



Adjustment procedure

- (1) Press and hold INPUT key on control panel and then POWER ON to access I²C adjustment mode.
- (2) Choose "SERVICE" item from I²C adjustment menu by pressing CURSOR ►.
- (3) Screen VR should be turned clockwise gradually and set so that retrace line begins to appear.
- (4) Return to "NORMAL" mode by CURSOR ◀ again.
- (5) Adjust Focus VR's so that focus is even all around screen.

2.2 DCU Phase Data Setting

Adjustment preparation

- (1) Cut off adjustment should be finished.
- (2) Set video conditions to factory preset.

Adjustment procedure

NORMAL MODE

- (1) Receive any NTSC signal.
- (2) Push "SERVICE ONLY" SW on CONV. FOCUS PWB. (Enter to DCU ADJ. mode).
- (3) Push HELP key on R/C. (Green cross hatch is displayed).
Then push EXIT key on R/C. (Character pattern is displayed. This is the PHASE setting mode).
- (4) Set PH-H phase data as shown below by using 4 and 6 key on R/C.
- (5) Set PH-V phase data as shown below by using 2 and 5 key on R/C.
- (6) Set CR-H phase data as shown below by using CURSOR ◀ and ► key on R/C.
- (7) Set CR-V phase data as shown below by using CURSOR ▲ and ▼ key on R/C.
- (8) Push HELP key on R/C to exit from the PHASE mode.
- (9) Push PIP MODE key 2 times on R/C to write the phase data to memory.
- (10) When Green dots are displayed, push MUTE key to return to DCU ADJ. mode.
- (11) Push "SERVICE ONLY" SW to return to RF or VIDEO mode.

1080i THROUGH MODE

- (12) Receive any 1080i signal (Input to Component video terminal). Select "Aspect 5" on SET-UP, PICTURE FORMAT of OSD MENU.
- (13) Repeat steps (2) ~ (11) above.

NORMAL MODE

PHASE MODE

PH-H :BF
PH-V: 07
CR-H: 4C
CR-V: 0C

1080i THROUGH MODE

PHASE MODE

PH-H: BF
PH-V: 07
CR-H: 4C
CR-V: 0C

2.3 Horizontal Position Adjustment (Coarse)

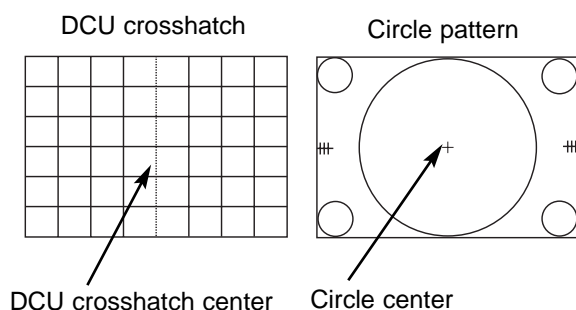
Adjustment preparation

- (1) DCU PHASE DATA SETTING should be finished.

Adjustment procedure

NORMAL MODE

- (1) Receive circle pattern (03ch.)
- (2) Push SERVICE ONLY switch to display DCU crosshatch. Mark the DCU crosshatch center position using your finger tip.
- (3) Push SERVICE ONLY switch again to exit from the DCU crosshatch.
- (4) Go to I²C ADJ. mode.
- (5) Choose H. POSI item by using R/C MENU (or up/down cursor) key. Adjust horizontal position to match the circle center to DCU crosshatch center (marked by your finger tip).
- (6) Exit from I²C menu.



1080i THROUGH MODE

- (1) Receive 1080I (fH=33.75KHz) circle pattern signal. (Input to component video terminal.)
- (2) Select "Aspect 5" on SET-UP, PICTURE FORMAT of OSD MENU.
- (3) Repeat above steps (2)~(6).

2.4 Raster Tilt adjustment (Deflection yoke)

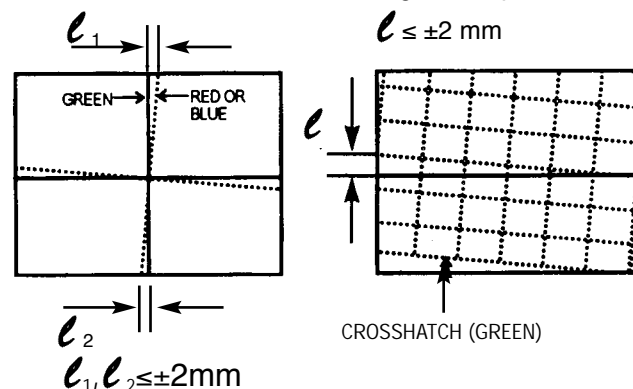
Adjustment preparation

- (1) The set can face east or west.
- (2) Input the single cross test signal.
- (3) Set video conditions to factory preset.
- (4) The lens focus and horizontal position adjustment should have been coarse adjusted.
- (5) The electrical focus should have been coarse adjusted.
- (6) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the Power/Deflection PWB and then press the power button.
- (7) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Short-circuit 2P (TS) sub-mini connectors on Red and Blue CPT P.W.B.s to project only the Green beam.
- (2) Turn the G deflection yoke and adjust the vertical raster inclination.
- (3) Then, remove the short on the 2P(TS) sub-mini connectors on the Red and Blue CPT PWB's and project red or blue light and green light together on screen.

- (4) Turn the deflection yoke of R or B and set so that the inclination of R or B light with respect to the green light is as shown below on the top and bottom sides.
- (5) After raster inclination adjustment, fixing screw of DY should be screwed with 12±2kg-cm torque.



- Notes:**
- (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again, on POWER/DEFLECTION PWB.
 - (2) To restore old RAM data, turn TV off and on.

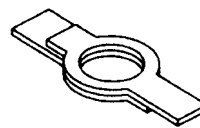
2.5 Beam alignment

Adjustment preparation

- (1) Adjust at least 30 minutes after turning on power switch.
- (2) Raster tilt should be completed. Raster position, horizontal and vertical size, and optical focus adjustment should be coarse adjusted.
- (3) Set video conditions to factory preset.
- (4) Receive cross-hatch signal.

Adjustment procedure

- (1) Green (G) tube beam alignment adjustment. Short-circuit 2P subminiature connector plug pins of Red (R) and Blue (B) on the CPT boards and project only Green (G) light or you may cover the R and B lens.
- (2) Put Green (G) tube beam alignment magnet to the cancel state as shown below.



- (3) Turn the Green (G) static focus (Focus Pack) counterclockwise all the way and make sure of position of cross-hatch center on screen. (Halo state.)
- (4) Turn the Green (G) static focus (Focus Pack) clockwise all the way. (Blooming state.)
- (5) Turn two magnets forming alignment magnet in any desired direction and move cross-hatch center to position found in (3).
- (6) If image position does not shift when Green (G) static focus (Focus Pack) is turned. Green (G) beam alignment has been completed.
- (7) If image position shifts when Green (G) static focus (Focus Pack) is turned, repeat (2)-(6).
- (8) Conduct beam alignment for red (R) and Blue (B) focus: Focus Pack UFPK.
- (9) Upon completion of adjustment, fix beam alignment magnets with white paint.

2.6 Raster position adjustment

Adjustment preparation

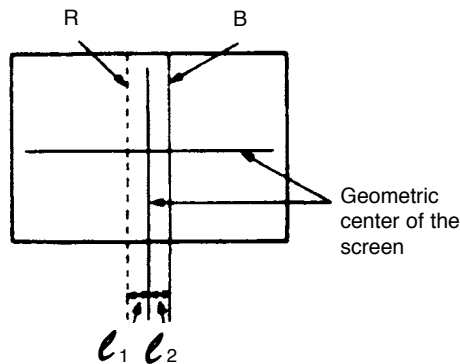
- (1) The set can face east or west.
- (2) Input the single cross test signal.
- (3) Set video conditions to factory preset.
- (4) The electric focus should have been coarse adjusted.
- (5) The digital convergence RAM should be cleared (uncorrected state). With the TV set off, press and hold the service switch located on the Power/Deflection PWB and then press the power button.
- (6) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Turn the centering magnets for red, green, and blue to satisfy the condition below. The red and blue horizontal lines should match with green.

	ℓ_1 (RED)	ℓ_2 (BLUE)
43"	30	30
53" SDX	20	35
53" FDX	20	35

Tolerance: $\pm 2\text{mm}$



- (2) Upon completion of adjustment, fix centering magnets with white paint.

NOTES: (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again.
 (2) To restore old RAM data, turn TV off and on.

2.7 Vertical size adjustment

Adjustment preparation

- (1) The set can face east or west.
- (2) Set video conditions to factory preset.
- (3) The electric focus should have been coarse adjusted.
- (4) Start adjustment 20 minutes or more after TV is turned on.

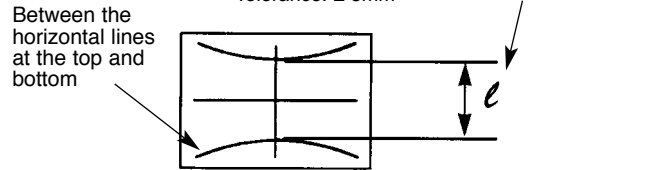
Adjustment procedure

- (1) Receive any NTSC signal.
- (2) Press the SERVICE ONLY SW on CONVERGENCE FOCUS PWB and POWER to display DCU uncorrected convergence data.

- (3) Locate the vertical size VR (R607) on DEFLECTION PWB. Adjust the vertical size according to the following table.

$\ell =$	NORMAL MODE
43"	590
53" SDX	710
53" FDX	710

Tolerance: $\pm 5\text{mm}$



- Notes:** (1) If internal cross-hatch does not appear after clearing RAM data, press service switch again (on POWER/DEFLECTION PWB).
 (2) To restore old RAM data, turn TV off and on.
 (3) V-Size is only done in NORMAL mode (NTSC).

2.8 Horizontal size adjustment

Adjustment preparation

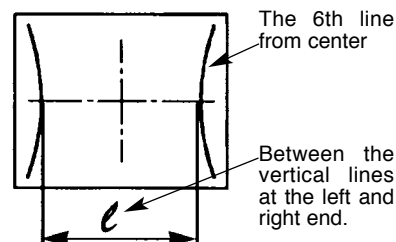
- (1) The set can face east or west.
- (2) Set video conditions to factory preset.
- (3) The electric focus should have been coarse adjusted.
- (4) Start adjustment 20 minutes or more after TV is turned on.

Adjustment procedure

- (1) Receive any NTSC signal.
- (2) Press the SERVICE ONLY SW on CONVERGENCE/FOCUS PWB and POWER to display DCU uncorrected converge data.
- (3) Locate the horizontal size VR (R711 on POWER/DEF PWB). Adjust horizontal size to the table below.

$\ell =$	NORMAL MODE
43"	825
53" SDX	1000
53" FDX	1020

Tolerance: $\pm 5\text{mm}$



- Notes:** (1) Once Normal mode Horizontal size adj. is done. To restore old RAM data, turn TV off and on.
 (2) After adjustment, press SERVICE ONLY switch to exit DCU crosshatch.
 (3) H. SIZE adjustment is only done in NORMAL MODE (NTSC).

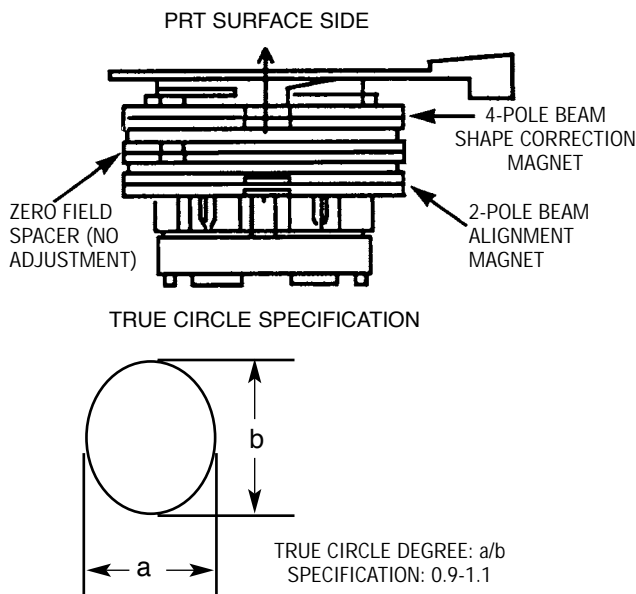
2.9 Beam form adjustment

Adjustment preparation

- (1) The beam alignment should have been completed.
- (2) The raster tilt, centering, horizontal/vertical size, scanning area check, and raster distortion should have been completed.
- (3) Set video conditions to factory preset.
- (4) Input the dot signal.

Adjustment procedure

- (1) Green PRT beam shape adjustment. Short-circuit 2P (TS) sub-mini connectors on Red and Blue CPT P.W.B.s to project only the Green beam.
- (2) Turn the green static focus VR, on the Focus Pack, fully clockwise. (Blooming)
- (3) Make the dot at the screen center a true circle using the 4-pole magnet as shown below.
- (4) Also adjust the Red and Blue PRT beam shapes according to the steps (1) to (3).
- (5) After the adjustment has been completed, return



2.10 LENS FOCUS ADJUSTMENT

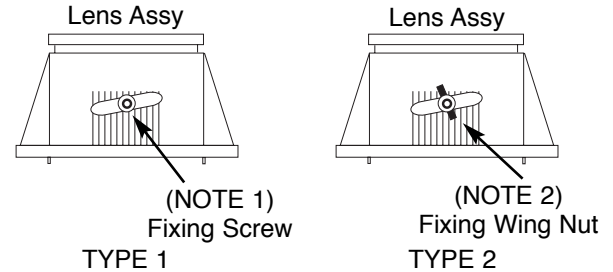
Adjustment preparation

- (1) The orientation of PTV set is arbitrary, west, east, north and south.
- (2) Centering DY inclination should have been adjusted.
- (3) Electrical focus adjustment should have been completed.
- (4) Drive VR location adjustment should have been completed. (Red : 12 O'clock, Green : 1~2 O'clock).
- (5) Receive the cross-hatch pattern signal.
- (6) Refer to setup below.
CONTRAST : HALF of full scale.
BRIGHTNESS : minimum

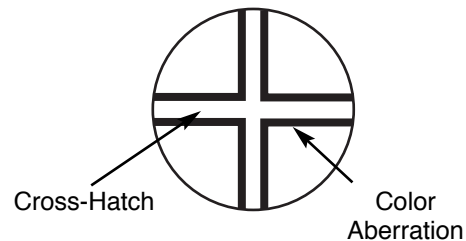
Adjustment procedure

- (1) Loosen the fixing screw or wing nut on the lens cylinder so that the lens cylinder can be turned. (Be careful not to loosen too much). After completing steps (4), (5), (6) below, tighten the fixing screws or wing nuts for each lens with a torque of 1.18N.m (12Kgf cm) ~ 1.67N.m (17Kgf cm).

(Be careful the lens cylinder does not turn after having tightened the screw or wing nuts. If it is tightened too much, lens may tilt or screw may break.)

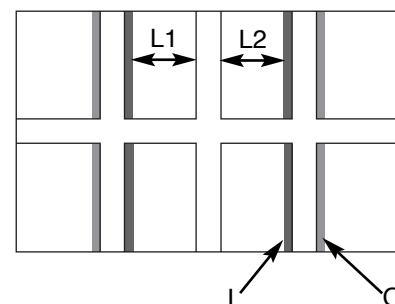


- (2) Apply covers to each color of R, G and B lenses. And project a single color on the screen and adjust in sequence. (The adjustment order of G, R and B is only an example.)
- (3) If the lens adjustment knob is turned clockwise viewed from the front, the color Aberration change as follows.



	Change of Color Aberration	
	Short focus	Long focus
RED LENS	Orange	Scarlet
GREEN LENS	Blue	Red
BLUE LENS	Purple	Green

- (4) In case of G lens. Set to the point where the chromatic aberration switches from blue to red. If the chromatic aberration appearing all over the screen is not the same, observe the vertical bright line and adjust lens focus as specified in table below. When the red chromatic aberration appearing at both sides of the bright line is not equal, observe the side with larger chromatic aberration when adjusting.



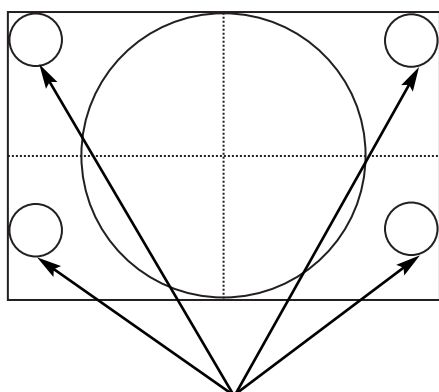
OPTICAL FOCUSING ADJUSTMENT GREEN

CHASSIS		DP15H/J	DP15K
SCREEN SIZE		53"	43"
L1 and L2 (PITCHES from CENTER)		3.0	3.0
COLOR ABERRATION	BETWEEN L1&L2	*	*
	I	2.0mm MAX	2.5mm MAX
	O	2.0mm MAX	2.5mm MAX

(NOTE) * Slightly reddish or no color

** Slightly reddish or no color

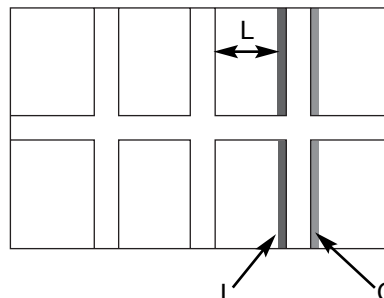
Change the signal to the circle pattern and fine adjust. Observe the corner part of the screen, especially observe number in the small circle when adjusting. If the focus performance at the screen center exceeds the lower limit, it is acceptable.



Small circle of circle pattern

- NOTES: 1. Since the G light is very important for picture quality and performance, pay special attention in its adjustment.
2. Be careful not to touch the lens with your fingers when adjusting.

- (5) In case of R lens. Set the position where the chromatic aberration changes from red to crimson. As shown below, observe the vertical bright line and adjust lens focus where the crimson or red chromatic aberration slightly appears inside, and crimson or red outside (reference value : 1~4mm) at the point specified in table below. Change the signal and fine-adjust the same way as the G lens.



NOTE: Setting the center between Red and crimson is optimum.

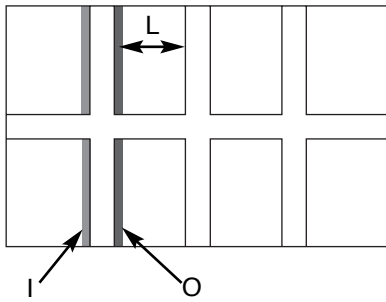
OPTICAL FOCUSING ADJUSTMENT RED

CHASSIS		DP15H/J	DP15K
SCREEN SIZE		53"	43"
L1 and L2 (PITCHES from CENTER)		3.0	3.0
COLOR ABERRATION	BETWEEN L1&L2	*	*
	I	2.0mm MAX	3.5mm MAX
	O	2.0mm MAX	2.5mm MAX

(NOTE) * Slightly reddish or no color

** Slightly reddish or no color

- (6) In case of B lens. Set the position where the chromatic aberration changes from purple to green. As shown below, observe the vertical bright line and adjust lens focus where the purple or green chromatic aberration slightly appears inside and purple or green outside (reference value : 1~4mm) at the point specified in table below. Change the signal and fine-adjust in the same way as the G lens.



NOTE: Setting to the center between purple and crimson is optimum.

OPTICAL FOCUSING ADJUSTMENT BLUE

CHASSIS		DP15H/J	DP15K
SCREEN SIZE		53"	43"
L1 and L2 (PITCHES from CENTER)		3.0	3.0
COLOR ABERRATION	BETWEEN L1&L2	*	*
	I	2.0mm MAX	3.5mm MAX
	O	2.0mm MAX	3.5mm MAX

(NOTE) * Slightly reddish or no color
** Slightly reddish or no color

- (7) After all colors have been adjusted, display all colors with the cross-hatch pattern signal and check the focus performance.
- (8) Then, select the circle pattern signal and check the focus performance of each color and all colors together.
- (9) If the focus performance is not acceptable re-adjust step (1) to (6).

2.11 STATIC FOCUS ADJUSTMENT

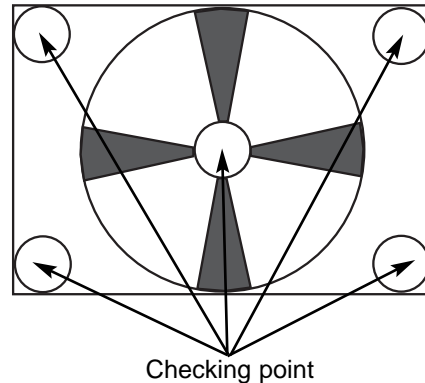
Adjustment preparation

- (1) LENS FOCUS adjustment should be finished.
- (2) Contrast : MAX
Brightness : Center.
- (3) Receive the circle pattern signal.
- (4) Apply covers to the lens of the colors you are not adjusting and project only one color on the screen.

Adjustment procedure

- (1) Red and blue static focus adjustment. Adjust the static focus VR on Focus pack (UFPK) so that the center of circle pattern is the most clear. Check that the focus does not get conspicuously worse at the edges of the circle pattern signal or cross-hatch signal.
- (2) Green static focus adjustment. Adjust the static focus VR on Focus pack (UFPK) (for green) so that the center of circle pattern is the most clear. Check that the focus does not get conspicuously worse at the checking point, the periphery of circle pattern cross-hatch signal.

NOTE: Checking point for the periphery of picture.

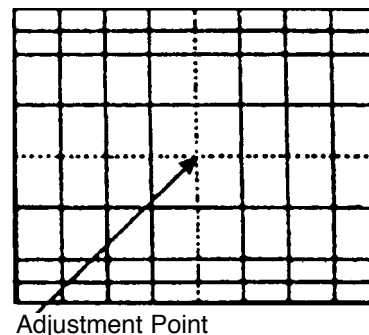


2.12 Digital convergence adjustment

Note: If replacing a PRT, DY, etc. perform auto-digital convergence first. (Press front panel MAGIC FOCUS switch and in through mode). This can eliminate the need for a complete digital convergence alignment.

Adjustment preparation

- (1) Receive an RF or video signal.
- (2) Set controls to factory preset.
- (3) Install jig screen on the set.
- (4) Note the center of the video pattern displayed. This is necessary to match dotted lines (adjustment point viewed) and actual point that is adjusted and displayed by the video signal.
- (5) Press the service only switch (on CONV./FOCUS PWB). The pattern displayed is now the digital convergence mode.
- (6) When performing a complete digital convergence adjustment CLEAR DATA in RAM. (With the TV set off, press and hold the service switch located on the CONV./FOCUS P.W.B. and then press the POWER button).



2.12.1 MAGIC FOCUS Character Set-Up

This instruction should be applied when a new DCU is being replaced.

Adjustment Preparation

- (1) Receive NTSC RF or video signal.
- (2) With Power off, PRESS and HOLD the SERVICE ONLY button on CONVER/FOCUS PWB, then press the Power On/Off, when picture appears release SERVICE ONLY switch. (Internal crosshatch is displayed without conv. correction data.)

Adjustment Procedure

NORMAL MODE

- (1) Press FREEZE key on R/C. (One additional line appears near the top and near the bottom.)
- (2) Press PIPCH key, then ADJ. PARAMETER mode is displayed as following.
- (3) Press ◀ or ▶ key to change the ADJ. DISP. data.

ADJ. PARAMETER
ROM WRITE?
→ ADJ. DISP. : 77

SEL. STAT. : 00
DEMO.WAIT : 2f

- (4) Press CURSOR ▼ to access DCU parameter. Change the data as shown on Table 1,2 OR 3, DCU Parameter.

TABLE 1. - DCU PARAMETER (DP15K)

Parameter	Normal	1080i Through
ADJ. DISP	77	77
INT START	03	03
DEMO WAIT	2F	2F
V. SQUEEZE	FO	F1
INT STEP 1	02	02
INT STEP 2	06	06
INT DELAY	01	01
INT BAR	30	30
MGF STEP 1	00	00
MGF STEP 2	06	06
MGD DELAY	01	01
MGF BAR	1B	1B
SENSOR CK	00	00
PORT 0	00	00
PORT 1	01	01
PORT 2	02	02
PORT 3	03	03
PORT 4	04	04
PORT 5	05	05
PORT 6	06	06
PORT 7	07	07
AD LEVEL	03	03
CENT BAL	00	00
E. DISPLAY	00	00
E. ADJ. TIMS	60	60
E. AD LEVEL	03	05
E. AD NOISE	0A	0A
PHASE MOT	60	60
H. BLK-RV	05	03
H. BLK-GV	01	01
H. BLK-BV	05	03
H. BLK-H	00	00
PON DELAY	0C	0C
IR-CODE	00	00
INITIAL 50	9E	9E
MGF 50	96	96
CENTER 50	FE	FE
STAT 50	FE	FE
DYNA 50	9F	9F

TABLE 2. - DCU PARAMETER (DP15H)

Parameter	Normal	1080i Through
ADJ. DISP	77	77
DEMO WAIT	2F	2F
INT. START	03	03
V. SQUEEZE	FO	F1
INT STEP1	02	02
INT STEP2	06	06
INT BAR	30	30
INT DELAY	01	01
MGF STEP1	00	00
MGF STEP2	06	06
MGF BAR	1B	1B
MGF DELAY	01	01
SENSOR CK	00	00
PORT 0	00	00
PORT 1	01	01
PORT 2	02	02
PORT 3	03	03
PORT 4	04	04
PORT 5	05	05
PORT 6	06	06
PORT 7	07	07
AD LEVEL	03	03
CENT. BAL.	01	01
E. DISPLAY	00	00
E. ADJTMS	60	60
E. ADLEVEL	05	05
E. ADNOISE	0A	0A
PHASE MOT	60	60
H. BLK-RV	06	03
H. BLK-GV	01	01
H. BLK-BV	06	03
H. BLK-H	00	00
PON DELAY	0C	0C
IR-CODE	00	00
INITIAL 50	9E	9E
MGF 50	96	96
CENTER 50	FE	FE
STAT 50	FE	FE
DYNA 50	9F	9F

TABLE 3. - DCU PARAMETER (DP15J)

Parameter	Normal	1080i Through
ADJ. DISP	77	77
DEMO WAIT	2F	2F
INT. START	03	03
V. SQUEEZE	FO	F1
INT STEP1	02	02
INT STEP2	06	06
INT BAR	2A	2A
INT DELAY	01	01
MGF STEP1	00	00
MGF STEP2	06	06
MGF BAR	1B	1B
MGF DELAY	01	01
SENSOR CK	00	00
PORT 0	00	00
PORT 1	01	01
PORT 2	02	02
PORT 3	03	03
PORT 4	04	04
PORT 5	05	05
PORT 6	06	06
PORT 7	07	07
AD LEVEL	03	03
CENT. BAL.	00	00
E. DISPLAY	00	00
E. ADJTMS	60	60
E. ADLEVEL	05	05
E. ADNOISE	0A	0A
PHASE MOT	60	60
H. BLK-RV	06	03
H. BLK-GV	01	01
H. BLK-BV	06	03
H. BLK-H	00	00
PON DELAY	0C	0C
IR-CODE	00	00
INITIAL 50	9E	9E
MGF 50	96	96
CENTER 50	FE	FE
STAT 50	FE	FE
DYNA 50	9F	9F

- (5) Press PIP MODE key 2 times to write the changed data into EEPROM. (First press, ADJ. PARAMETER / ROM WRITE ? is displayed. 2nd press writes data into EEPROM. Green dots appear after completion of operation.)
- (6) Press MUTE key 3 times to exit from ADJ. PARAMETER mode.

1080i THROUGH MODE

- (6) press EXIT button 5 times to return to VIDEO mode.
- (7) Select INPUT with 1080i input.
- (8) Access menu and select ASPECT 5 (Through Mode).
- (9) press SERVICE SW. only to enter DCU crosshatch signal.
- (10) Repeat steps 1 through 6.

NOTE: 4:3 aspect model has 2 DCU memories. One is for NTSC input, the other is for 1080i through mode. All DCU data must be done in both modes.

2.12.2 MAGIC FOCUS Pattern Set-Up

- NOTE:** (1) This instruction should be applied when a new DCU is being replaced.
- (2) This instruction shows how to set up the pattern position for MAGIC FOCUS.

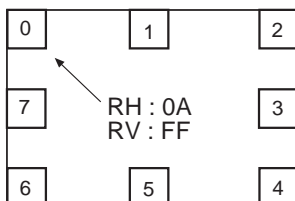
Adjustment Procedure

- (1) Receive NTSC RF or video signal.
- (2) With Power off, PRESS and HOLD the SERVICE ONLY button on CONVER/FOCUS PWB, then press the Power On/Off, when picture appears release SERVICE ONLY button. (Internal crosshatch is displayed without conv. correction data.)

Adjustment Procedure

NORMAL MODE

- (1) Press FREEZE key on R/C. (One additional line appears near the top and near the bottom.)
- (2) Press HELP key, then MAGIC FOCUS PATTERN mode is displayed as follows:



- (3) Use [6] key on remote control to rotate the arrow. Arrow indicates each sensor position. (Upper left corner, middle top, upper right corner, right middle, in this order).
- (4) Use the keys to switch color of pattern.
STATUS : Green pattern
0 : Red pattern
ANT : Blue pattern
- (5) Press ◀ or ▶ key to change the data value to the horizontal direction. Press ▲ or ▼ key to change the data value to the vertical direction.
- (6) Set the data as shown below:

Pattern Position

8		1		2
7				3
6		5		4

DP15K

Normal Mode:

	0	1	2	3	4	5	6	7
RH	06	02	F6	FA	F8	02	08	02
RV	FF	FE	04	00	FC	01	00	00
GH	04	00	FC	00	FC	00	06	02
GV	00	FE	01	00	FE	02	FE	00
BH	06	FE	FC	00	FC	FE	06	02
BV	03	FE	01	00	00	02	FE	00

V. Squeeze Mode (1080i Through Mode):

	0	1	2	3	4	5	6	7
RH	06	02	F6	F8	F6	02	04	04
RV	FE	FF	04	01	FC	03	02	01
GH	06	00	FC	FC	FC	00	06	04
GV	01	FE	00	01	FF	03	00	01
BH	06	FE	FC	FC	FC	FE	06	06
BV	04	FE	FE	01	00	02	FF	01

DP15H

Normal Mode:

	0	1	2	3	4	5	6	7
RH	06	02	FC	FC	FA	02	06	02
RV	02	FF	04	00	FB	00	FD	00
GH	06	00	FA	FE	FC	00	06	02
GV	03	FF	03	00	FD	00	FD	00
BH	06	FE	FA	FE	FA	FE	06	04
BV	04	FF	01	00	FE	00	FC	00

V. Squeeze Mode (1080i Through Mode):

	0	1	2	3	4	5	6	7
RH	04	02	FC	FE	FC	02	06	02
RV	FF	FF	05	00	FA	01	FF	00
GH	06	00	FC	00	FE	00	06	02
GV	02	FE	03	00	FC	01	FC	00
BH	08	FE	FC	00	FE	FE	08	04
BV	06	FE	02	00	FF	01	F9	00

DP15J

Normal Mode:

	0	1	2	3	4	5	6	7
RH	04	02	FC	00	FC	02	06	02
RV	02	FF	06	00	F9	00	FD	00
GH	04	00	FC	00	FE	00	04	02
GV	04	00	04	00	FB	00	FB	00
BH	06	FE	FC	00	FE	FE	06	04
BV	06	FF	03	00	FD	00	F9	00

V. Squeeze Mode (1080i Through Mode):

	0	1	2	3	4	5	6	7
RH	06	02	FC	00	FC	02	08	02
RV	02	FF	08	00	F7	01	FD	00
GH	06	00	FC	00	FE	00	06	02
GV	05	FF	06	00	FA	01	FA	00
BH	08	FE	FC	00	FE	FE	08	04
BV	09	FE	03	00	FD	01	F7	00

- (7) Press PIP MODE key 2 times to write the changed data in EEPROM. (First press, ADJ. PATTERN/ROM WRITE ? 2nd press, writes data into EEPROM. Green dots appear after completion of operation.)
- (8) Press MUTE key 3 times to exit from PATTERN mode.

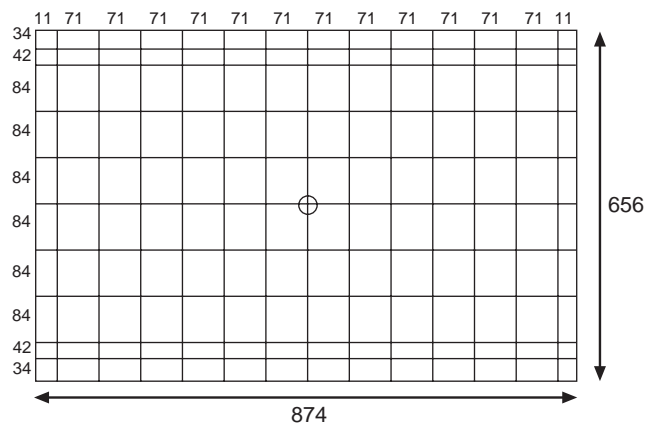
1080i THROUGH MODE

- (9) Press EXIT button 5 times to return to VIDEO MODE.
- (10) Select 1080i input signal.
- (11) Access MENU and select ASPECT 5 (Through Mode).
- (12) Press SERVICE SWITCH only to enter DCU crosshatch signal.
- (13) Repeat steps 1-8.

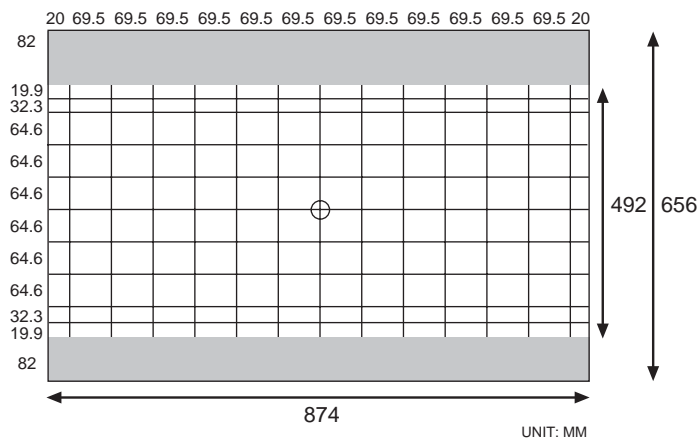
NOTE: 4:3 Aspect model has 2 DCU memories. One is for NTSC input, the other is for 1080i through mode (Aspect 5). All DCU data must be done in both modes.

2.12.3 Convergence Jig Screen Specifications

43" Full (4:3)

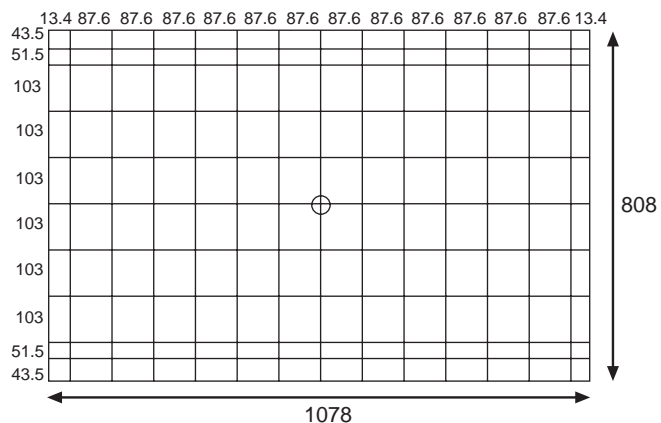


43" V. Squeeze (16:9)

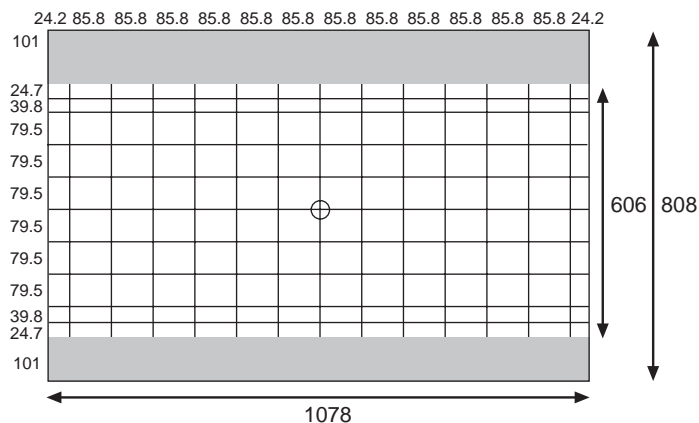


UNIT: MM

53" Full (4:3)



53" V. Squeeze (16:9)



UNIT: MM

Note: If only minor adjustments to convergence are needed, the jig screen is not necessary. Use digital data stored in memory and one color as a reference (red, green, or blue). DO NOT CLEAR DATA and WRITE to ROM memory.

2.12.4 Raster position adjustment

Adjustment preparation

- (1) Position adjustment - This will move an entire color. Use this adjustment to match colors at the center of the screen. (Active video center from external signal and physical screen center should now match from phase adjustment).
- (2) Use the buttons below to switch color to adjust.
"STATUS" - Green
"0" - Red
"ANT" - Blue

Adjustment procedure

- (1) Press the FREEZE button. Extra horizontal lines appear to confirm raster position mode.
- (2) Use the thumb stick to adjust position.
- (3) Press FREEZE again to exit raster position mode.

Notes: (1) Other functions cannot be accessed when in raster position adjustment mode. Press FREEZE and confirm extra horizontal lines disappear to exit raster position mode.
(2) Press MENU to switch between all colors displayed or adjustment color and Green only.

2.12.5 Convergence point adjustment

Adjustment preparation

- (1) Select color to adjust.
"STATUS" - Green
"0" - Red
"ANT" - Blue
- (2) Use 4, 6, 2, and 5 to move the cursor position (dotted lines).
- (3) Use CURSOR to move the convergence point.
- (4) Three adjustment modes are available:
 1. (3x3) Press "STATUS" 5 times (only works when DCU is in uncorrected state)
 2. (7x5) Press "0" 5 times
 3. (13x9) Press "ANT" 5 times

For touch-up, only the (13x9) mode is necessary. This will adjust every cross-hatch intersection point on the screen.

For complete adjustment, start with (3x3) mode. This will adjust center point and eight edge points only, but will greatly reduce adjustment time. Then use (7x5) mode, and finally (13x9) mode to finish convergence.

If "S" distortion appears between cross-hatch lines repeat (7x5) mode to change calculation process while adjusting to remove distortion, then return to (13x9) mode to finish touch-up convergence.

Adjustment procedure

NORMAL MODE

- (1) Receive any NTSC signal.
- (2) Start adjustment at the center of the screen.
- (3) Continue adjustment at next closest position.
- (4) Adjust center area first, ending with edge sections.
- (5) After interpolation, check convergence again and repeat (1)-(5) if necessary.
- (6) When convergence is acceptable, press PIP MODE to write data to ROM memory. ROM WRITE? is displayed to alarm system that ROM will be overwritten with new data. Press the PIP MODE button again to write displayed data to ROM.
- (7) DATA WRITE TO ROM will take approximately 4 seconds and no picture will be displayed.
- (8) Green dots will be displayed when operation is completed.
- (9) Press MUTE to return to convergence pattern, then confirm again convergence is acceptable.
- (10) Press PIP MODE (ROM WRITE) mode, then press PIP CH to initialize sensor data positions.

Adjustment procedure

- (12) Input any 1080i signal.

1080i THROUGH MODE

- (13) Press EXIT key 5 times to exit video mode.
- (14) Select an input with 1080i signal.
- (15) Access menu and select ASPECT 5 mode.
- (16) Press the SERVICE SW. ONLY button to enter to DCU crosshatch signal.
- (17) Repeat steps 2~10 above.

Notes: (1) Display only green for easier adjustment and match to jig screen. Press "MENU", THEN PRESS "STATUS".
(2) Perform interpolation and data write to ROM after green adjustment. Once green has been confirmed to match jig screen, the jig screen can be removed. Do not readjust the green color after jig screen has been removed. This is now your reference color.
(3) Display green and red only and match red to green.
(4) Display all colors and match blue to green and red. Touch-up red color if necessary.
(5) Existing DATA in ROM can be read by pressing the SWAP button 2 times. This data can be used after replacing a component (CRT, DY, etc.) Where complete convergence adjustment is not necessary, be careful not to overwrite this data. DO NOT write cleared RAM data into ROM or a complete convergence adjustment will be necessary. Remember to try MAGIC FOCUS before starting convergence adjustment to minimize adjustment time.

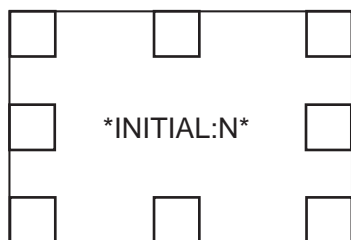
2.13.6 Magic Focus Initialize

Adjustment Preparation

- (1) Receive any NTSC signal. (Set is in Normal mode.)
- (2) Digital convergence adjustment should have been completed.
- (3) Set is in DCU adjustment mode.

Adjustment Procedure

- (1) Press "PIP MODE" and then "PIP CH" to initialize Magic Focus. The initialize operation starts and several windows appear during this operation. It takes about 30 seconds or less.
- (2) When green dots appear, initialize operation is finished.
- (3) Turn power OFF.
- (4) Receive any 1080i signal. Select Aspect 5/PICTURE FORMAT/SET UP of menu. (Set is in V. Squeeze mode.)
- (5) Repeat above steps (1)~(3) gain.



OSD: Normal mode:
INITIAL:N V.
Squeeze (HD through)
mode: *INITIAL:S*.

Initialization Operation

NOTE: DCU has 2 modes, Normal and V. Squeeze (1080i through) mode. Therefore, this adjustment needs to be done for both modes.

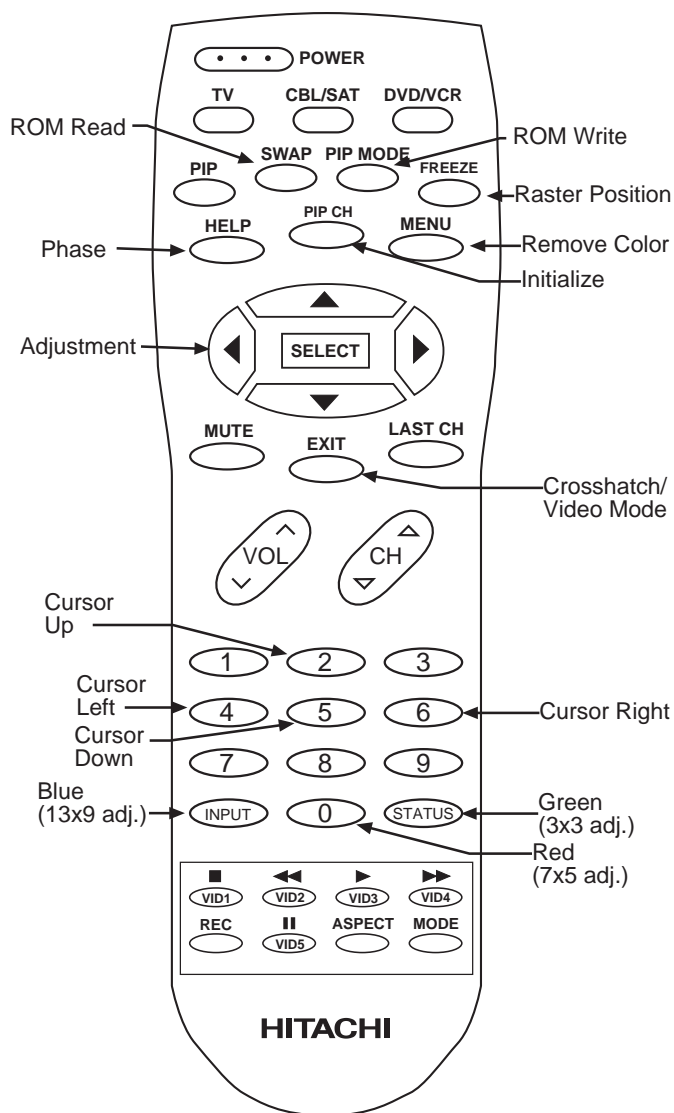
REMARKS

Another way to start the initialize operation:

- (1) Press "SERVICE ONLY" Sw. on CONVER/FOCUS PWB to set DCU adj. mode.
- (2) Press [PIP MODE] key on R/C. Then "ROM WRITE ?" is displayed for alarm. Next, press [PIP CH] key on R/C, the initialize operation starts. When green dots appear, initialize operation is finished.

NOTE: If there is an error message, red dots or an error code, refer to page 40, CONVERGENCE ERRORS.

2.13.1 Digital Convergence Remote Control



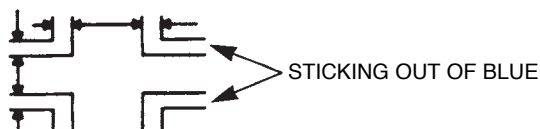
2.13 Blue defocus adjustment

Adjustment Preparation

- (1) Optical and electrical focus adjustment should have been completed.
- (2) The convergence adjustment should have been completed.
- (3) Set Video conditions to factory preset.
- (4) Input the cross-hatch signal.

Adjustment procedure

- (1) Turn the B Focus VR (Focus Pack) fully clockwise.
- (2) Adjust sticking out level of blue to specification shown in table below, by turning the (B) FOCUS VR counter clockwise.



UNEVENNESS SPECIFICATION: $\pm 1 \text{ cd/m}^2$

Defocus sticking out specification

Screen Size	Blue sticking out
43"	1.0mm
53"	1.0mm

Condition: User controls are set to the initial set positions (for shipment)

Measuring point-Screen center.

2.14 White balance adjustment

- (1) Screen adjustment
- (2) High light white balance.
- (3) Low light white balance.

I²C data for High light white balance

Green : G DRV (COOL) 3F (initial data)(Adjustable)
Red : R DRV (COOL) 3F (initial data)(Adjustable)
Blue : on FOCUS PACK EFPK

I²C data for Low light white balance

Green : G CUT OFF (COOL) 80 (initial) (Adj. data)
Red : R CUT OFF (COOL) 80 (initial) (Adj. data)
Blue : B CUT OFF (COOL) 80 (initial) (Fixed data)

Adjustment Preparation

- (1) Adjustment should start 20 min. or more after the TV power is turned ON.
- (2) CUT OFF ADJ. should be finished.
- (3) VIDEO control : Contrast is MAX., Others are center.
- (4) Color temp. : COOL

(5) Signal:

- * Hight Light white Balance Adj.
White raster 0.715Vpp (w/o sync., termination incidence : 75ohm.) 100IRE
- * Low Light white balance ADJ.
White raster 0.180Vpp (w/o sync., termination incidence : 75ohm.) 25 IRE (The brightness equal to 20cd/m² at screen center)

(6) BLUE defocus ADJ. should be finished.

(7) The vertical incident illumination on the screen should be 20 Lux. or less.

(8) Go into I²C service mode.

Adjustment Procedure

A. High Light W/B adjustment

- (1) Receive signal for High Light white balance ADJ.
- (2) Adjust white balance to 10800K \pm 0 MPCE (x=0.278; y=0.280) at center of screen, using R DRV/ G DRV with remote control.

B. Low Light W/B adjustment

- (1) Receive signal for Low Light white balance ADJ.
- (2) Adjust white balance to 10800K \pm 0 MPCE (x =0.278, y=0.280) at center of screen, using R CUT OFF/G CUT OFF/B CUT OFF with remote control. Do not touch screen VRs.
- (3) Take Blue color as a reference color, then adjust Low Light W/B by increasing other two colors CUT OFF data. Do not change G CUT OFF data.

Repeat A & B two or three times, until no adjustment is needed (white balance tracking-GOOD). If W/B tracking is not good, set all data (BothDRV and CUT OFF) to inital data, and change reference color to different color.

Note: If Low Light adj. spec cannot be followed, apply previous adj. spec. (adjust by eye.)

Adjustment preparation

- (1) Start adjustment after the power is turned on for 20 minutes or more.
- (2) The vertical incident illumination on the screen should be 20 lux or less. (Room should be dark).
- (3) Set the video settings (CONTRAST: max, others: center) to standard condition.
- (4) The blue defocus and cut off adjustments should be completed.
- (5) For low light white balance adjustment, input a white raster signal level of 0.286 Vp-p (Video input level).
- (6) For high light white balance adjustment, input a white raster signal level of 0.715Vp-p (Video input level).
- (7) Confirm R and G Drive (cool) data is 3F.
- (8) Set Video Advanced Settings-Color Temperature to COOL.

Adjustment procedure

- (1) Select the input signal for high brightness (Video level = 0.715Vpp).
- (2) Adjust the high brightness white balance by changing I²C menu (R and G DRV cool mode only).
- (3) Select the signal for low brightness (Video level = 0.286Vpp)
- (4) Adjust the low brightness white balance.
- (5) Check that high brightness white balance is still obtained. If it is not, return to step (2).

White balance = 10800° K ± 0 MPCD

Color coordinate = x 0.278

y 0.280

Normal: 7200°K

Warm: 6500°K

Adjustment procedure

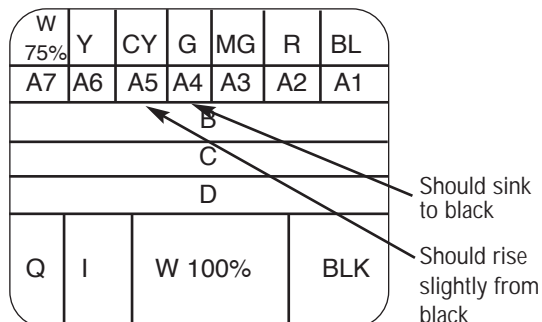
- (1) Go to "Sub Brightness" adjustment in I²C ADJUST mode (press Input and Power button on Control panel at same time), using Cursors ▲, ▼ and then Cursor ►.
- (2) Then adjust "Sub Brightness" using Cursors ◀, ▶ to increase or decrease the value, according to figure. (Visually adjust).
- (3) After adjustment, press MENU button to exit I²C ADJUST mode. (Data is stored in memory).

Note: When selecting SUB-BRIGHTNESS mode the microprocessor sets the CONTRAST and COLOR to MIN. automatically, but make sure that the other conditions are center. Directly observe the screen by eye without using a mirror.

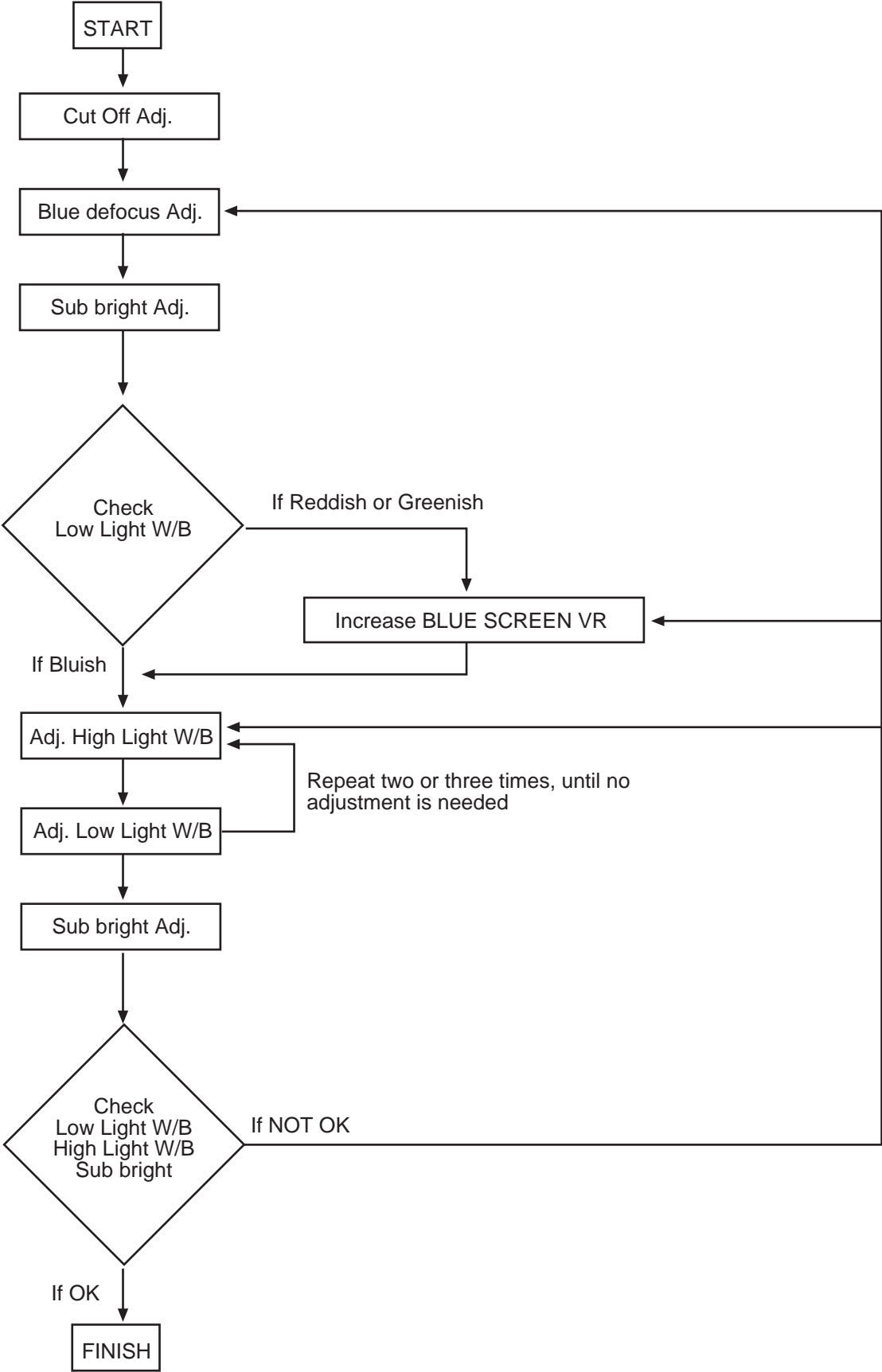
2.15 Sub brightness adjustment

Adjustment preparation

- (1) Start adjustment after the power is turned ON for 20 minutes or more.
- (2) Receive the color bar signal.
- (3) Set video conditions to factory preset.
- (4) The vertical incident illumination on the screen should be 20 lux or less. (Room should be dark).



WHITE BALANCE ADJUSTMENT FLOW CHART



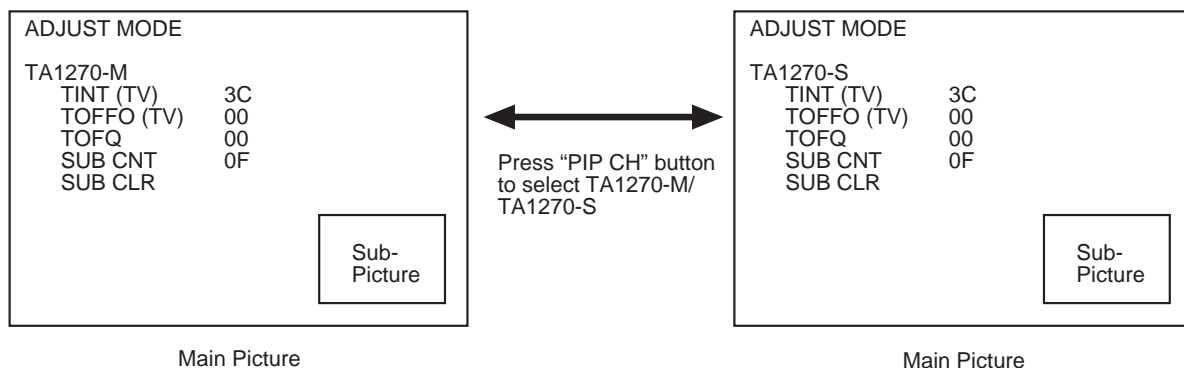
2.16 Sub Picture Signal Amplitude Adjustment

Adjustment preparation

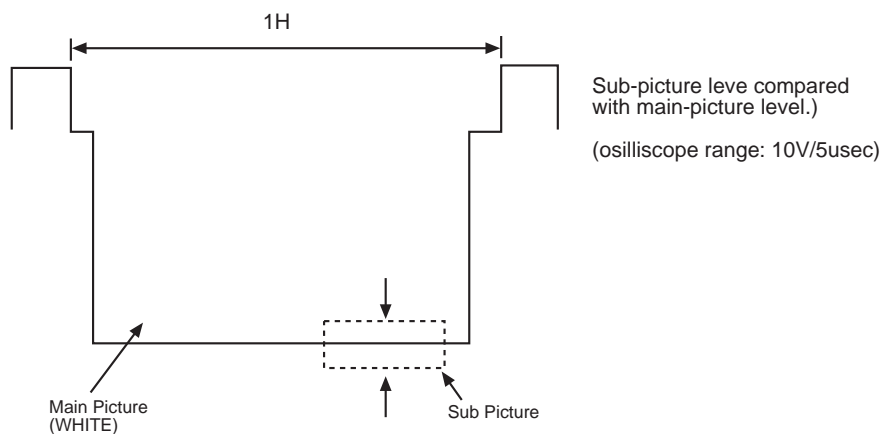
- (1) Sub-brightness adjustment should be finished.
- (2) Start adjustment about 20 minutes after the power switch is turned on.
- (3) Condition should be as follows:
Contrast : Max
Brightness : Center
- (4) Press PIP button of R/C unit.
- (5) The previous selected PinP will appear on the screen.
- (6) Select SINGLE mode and receive NTSC white signal (amplitude 2.0Vp-p=Open), main-picture and sub-picture (Do not use component signal).
- (7) Connect probe on the P852 (CPT PWB- Green) to check sub-picture amplitude.

Adjustment procedure

- (1) Display PIP SINGLE picture.
- (2) Go Into I²C service mode and press MENU button until TA1270-M is displayed on screen.
- (3) Press "PIP CH" button of R/C, "TA1270-M" change to "TA1270-S".
- (4) Observe P852 on the CPT PWB and change the "TA1270-S SUB CNT" I²C data so that the amplitude of the sub-picture is the same level as that of the main picture.



*Wave form of P852 (green Cathode)



Adjustment specification: $\pm 1V$
Quality control specification: $\pm 3V$

2.17 Horizontal position adjustment

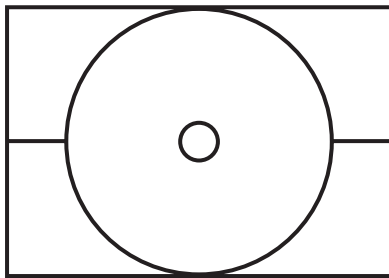
Adjustment preparation

- (1) Set video conditions to factory preset.
- (2) DIGITAL CONVERGENCE adjustment should be finished. (Normal mode and 1080i through mode).

Adjustment procedure

NORMAL MODE

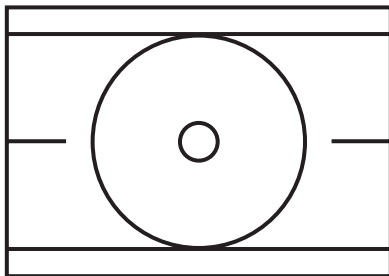
- (1) Receive circle pattern signal.
- (2) Go to I²C Adjustment mode by pressing INPUT and POWER button on control panel at the same time.
- (3) Choose H. POSI item by using CURSOR ▲,▼.
- (4) Adjust HOR. POSITION as following by using CURSOR ◀,▶.



Spec: Balance Left/Right side display position for H. position. H. size marker 0.7~1.5.

1080i THROUGH MODE

- (1) Input 1080i (fH=33.75kHz) component circle pattern signal to COMPONENT 3 or 4.
- (2) Go to I²C Adjustment mode by pressing INPUT and POWER button on control panel at the same time.
- (3) Choose H. POSI item by using CURSOR ▲,▼.
- (4) Adjust HOR. POSITION as following by using CURSOR ◀,▶.



Spec: Balance Left/Right side display position for H. position.

Balance Top/Bottom side display position for V. position (check only).

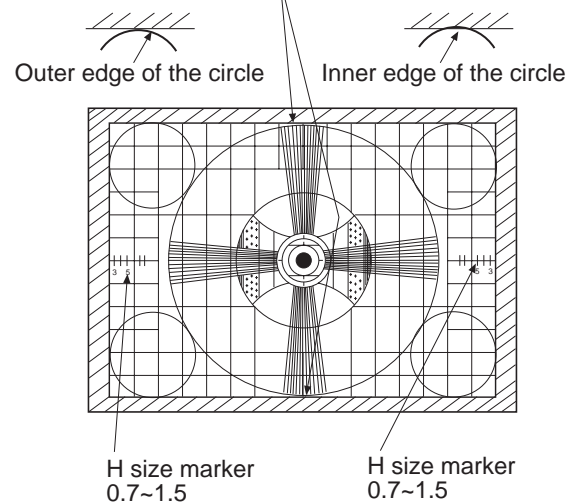
2.18 Scanning area check

Checking condition

NORMAL MODE

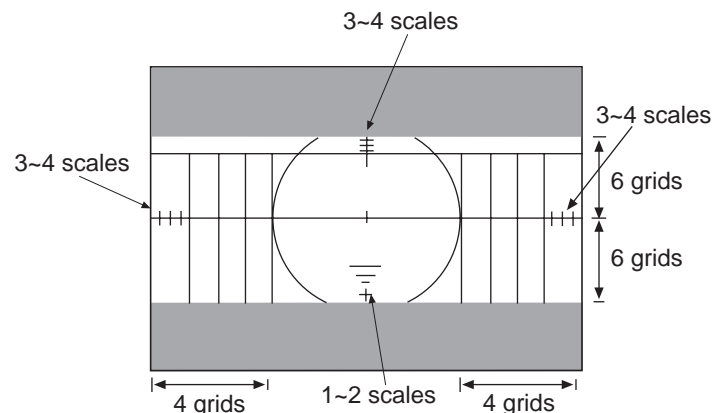
- (1) Digital convergence adjustment should have been completed.
- (2) Receive the circle pattern signal.
- (3) Brightness/Contrast - standard condition
Contrast:max
Other controls:center position
- (4) Check that the scanning area matches with the following drawing.

Top and bottom of the circle is between outer edge and inner edge.



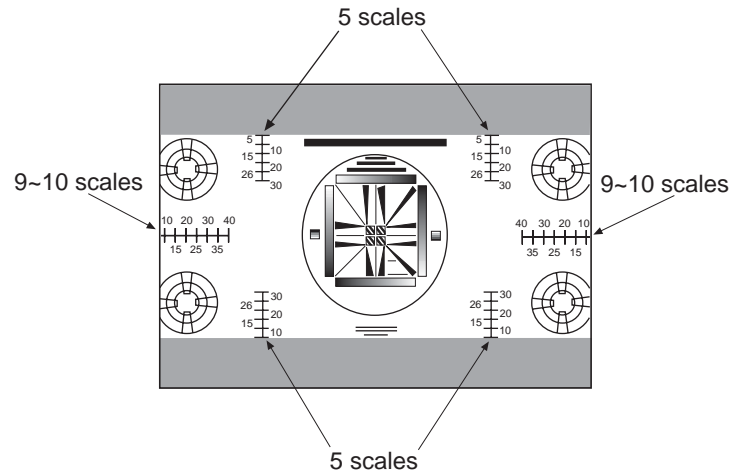
1080i THROUGH MODE

- (1) Receive 1080i circle pattern No.59 of LT1611*, LT1608* of LEADER signal generator.
SET UP: ASPECT 5/PICTURE FORMAT/SET UP MENU



- LT1611 : Programmable Video Generator
- LT1608 : Video Encoder

(2) Receive 1080i circle pattern of LT-449 (Leader).



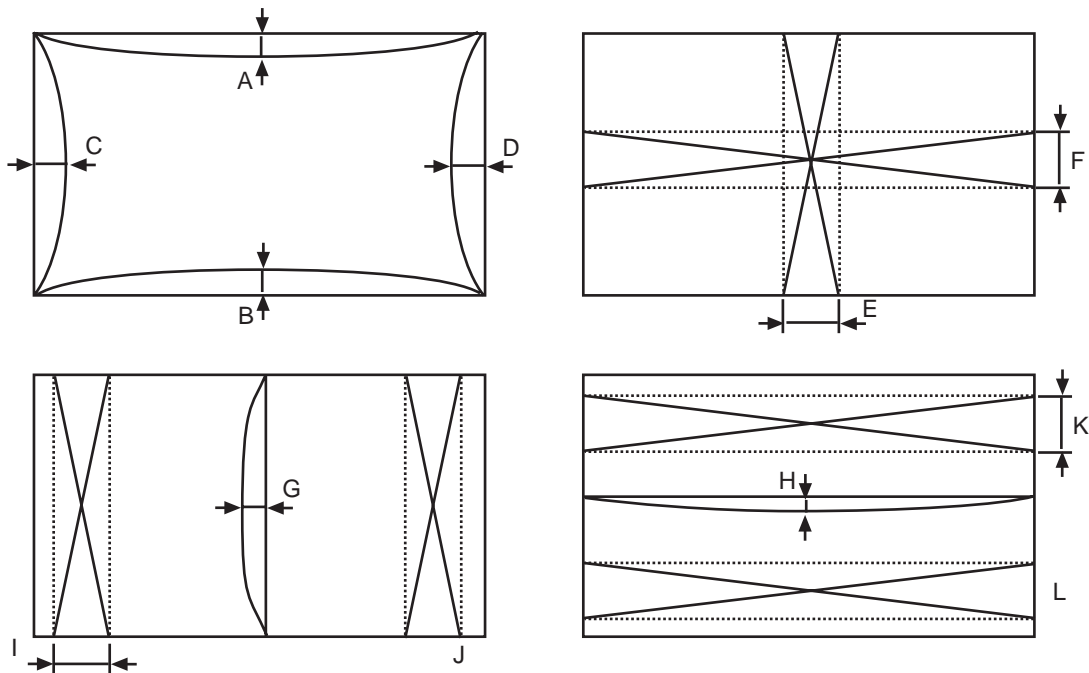
2.19 Raster distortion check

Checking condition

- (1) Digital convergence adjustment should have been completed.
- (2) Receive the cross-hatch signal (internal signal of the the set is acceptable).
- (3) Brightness/Contrast --- standard condition
Contrast : max
Other controls : center position
- (4) Check the raster distortion specification: Value shown in the table below or less.
A ~ D
I ~ L ---Measure the winding of the outside line.

(unit: mm)

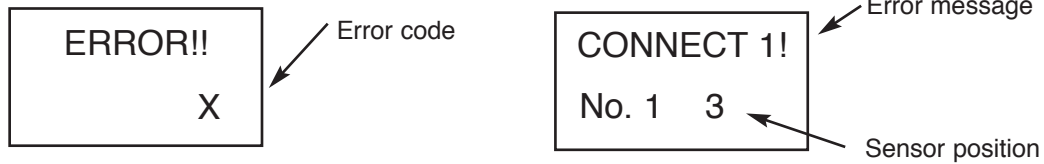
Item		Symbol	53"	43"
Top/Bottom pincushion distortion		A,B	±6	±5
Right/Left pincushion distortion		C,D	±4	±4
Center line tilt	Vertical line	5	6	5
	Horizontal line	5	6	5
Center line winding	Vertical line	±3	±3	±3
	Horizontal line	±3	±3	±3
Trapezoidal distortion		Vertical line	4	5
Skew distortion		Horizontal line	5	6



5. Convergence Errors.

If an error message or code appears while performing MAGIC FOCUS or initialize (PIP MODE, PIP CH in DCU service mode) follow this confirmation and repair method.

1. Turn on power and receive any signal.
2. Press service switch on Power/Deflection board.
3. Press "SWAP" then "PIP CH" on remote control.
4. Error code will be displayed in bottom right corner of screen. If there is no error, an "INITIAL OK" message will appear on screen.



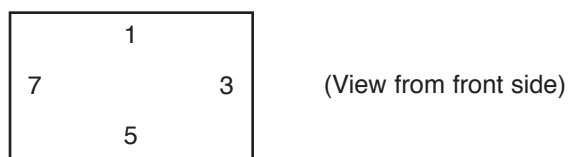
5. Follow repair table for errors.


DCU REPAIR TABLE

Error Code	Error Display Code	Countermeasure	Application	
			Initialize	Magic Focus
1	VF Error	Replace DCU	X	X
2 *2	Connect 1	1. Darken Outside Light 2. Placing of sensor 3. Is pattern hitting sensor 4. Check connection and solder bridge of sensor 5. Replace sensor 6. Replace sensor P.W.B. 7. Sensor Connector check 8. Replace DCU 9. Adjustment check (H/V size, centering)	X	—
3*2	A/D Level	Same as Error Code 2	X	X
4	Over Flow	1. Check the placement of sensor 2. Adjustment check (H/V size, centering) 3. Conv. amp. gain check *1 (check resistor values only)	X	X
5	Convergence	Same as Error Code 4	X	X
7	Operation	Same as Error Code 4	—	X
9	Connect 2	Same as Error Code 2	X	X
10	Noise	Input strong field signal Check the wiring of connector between sensor and DCU	X	X
11	Sync	Input strong field signal Check the wiring of connetor between sensor and DCU	X	X

*1 -- RK 41, 46, 50, 54, 58, 62 check these resistors.

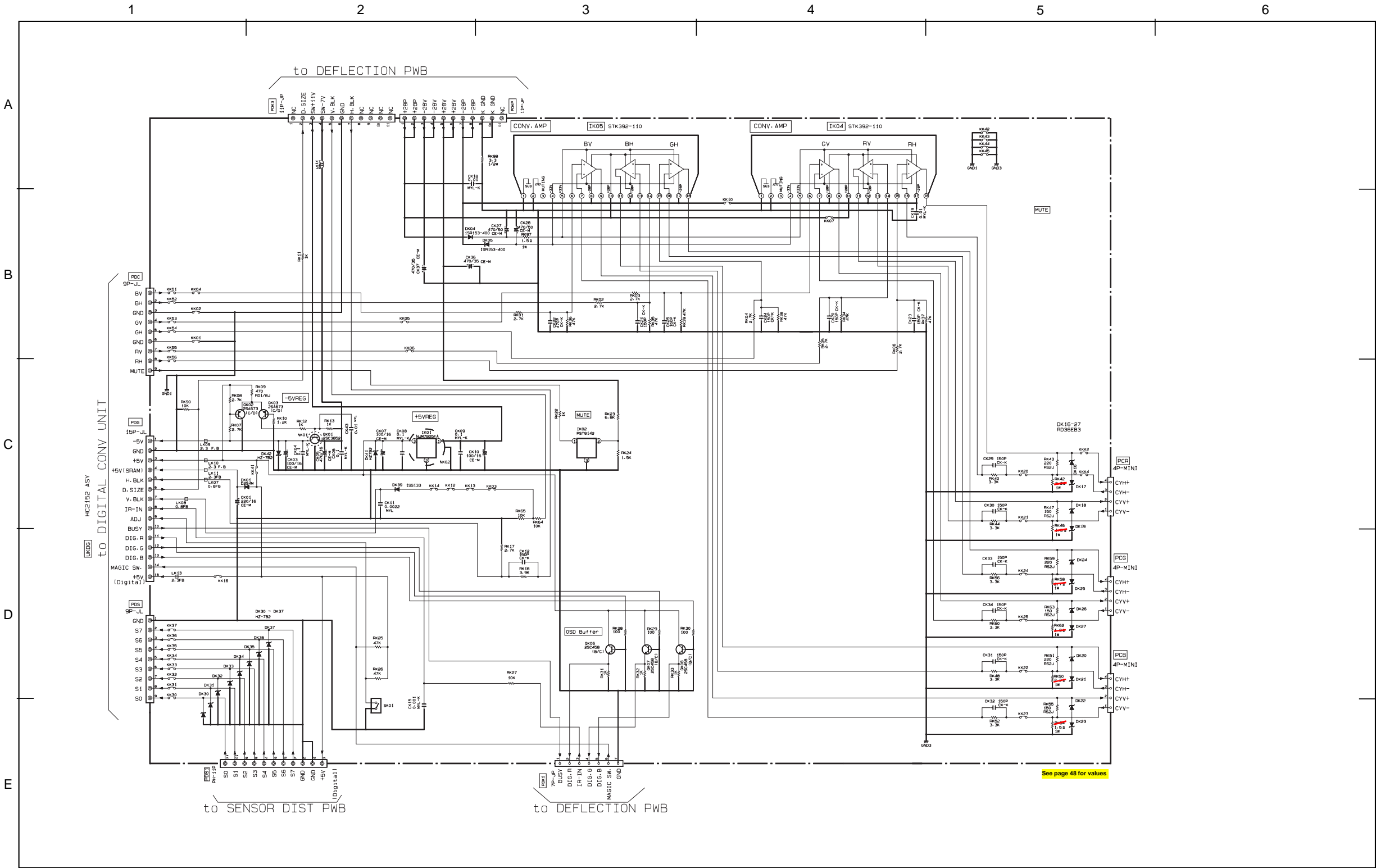
*2 Sensor Position



PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.


BASIC CIRCUIT DIAGRAM

CONVERGENCE
DP15K/DP15J/DP15H



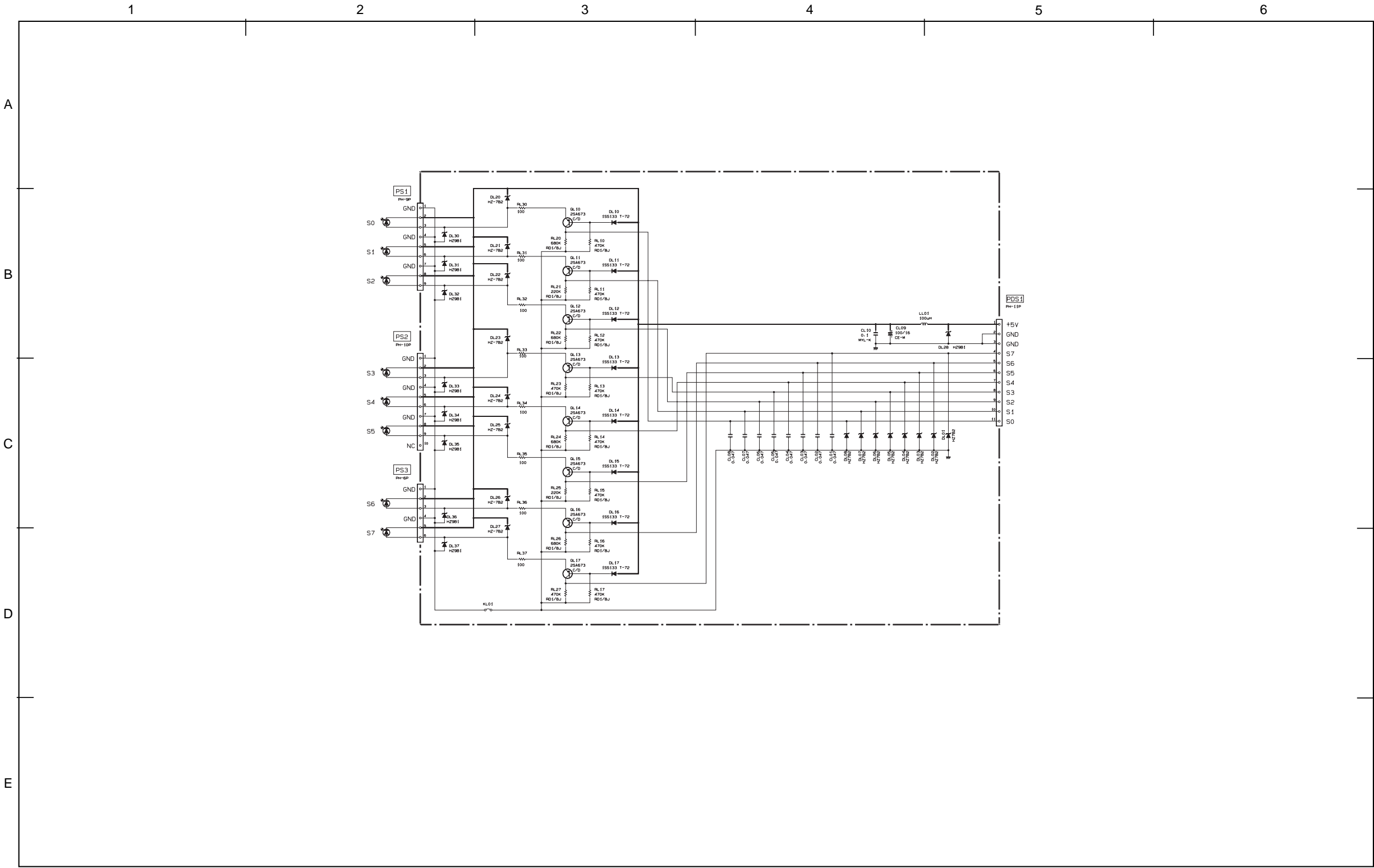
- All DC voltage to be measured with a tester (100kΩ/V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

CONVERGENCE DP15K/DP15J/DP15H

PRODUCT SAFETY NOTE: Components marked with a  and shaded have special characteristics important to safety. Before replacing any of these components, read carefully the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

BASIC CIRCUIT DIAGRAM

SENSOR
DP15K/DP15J/DP15H

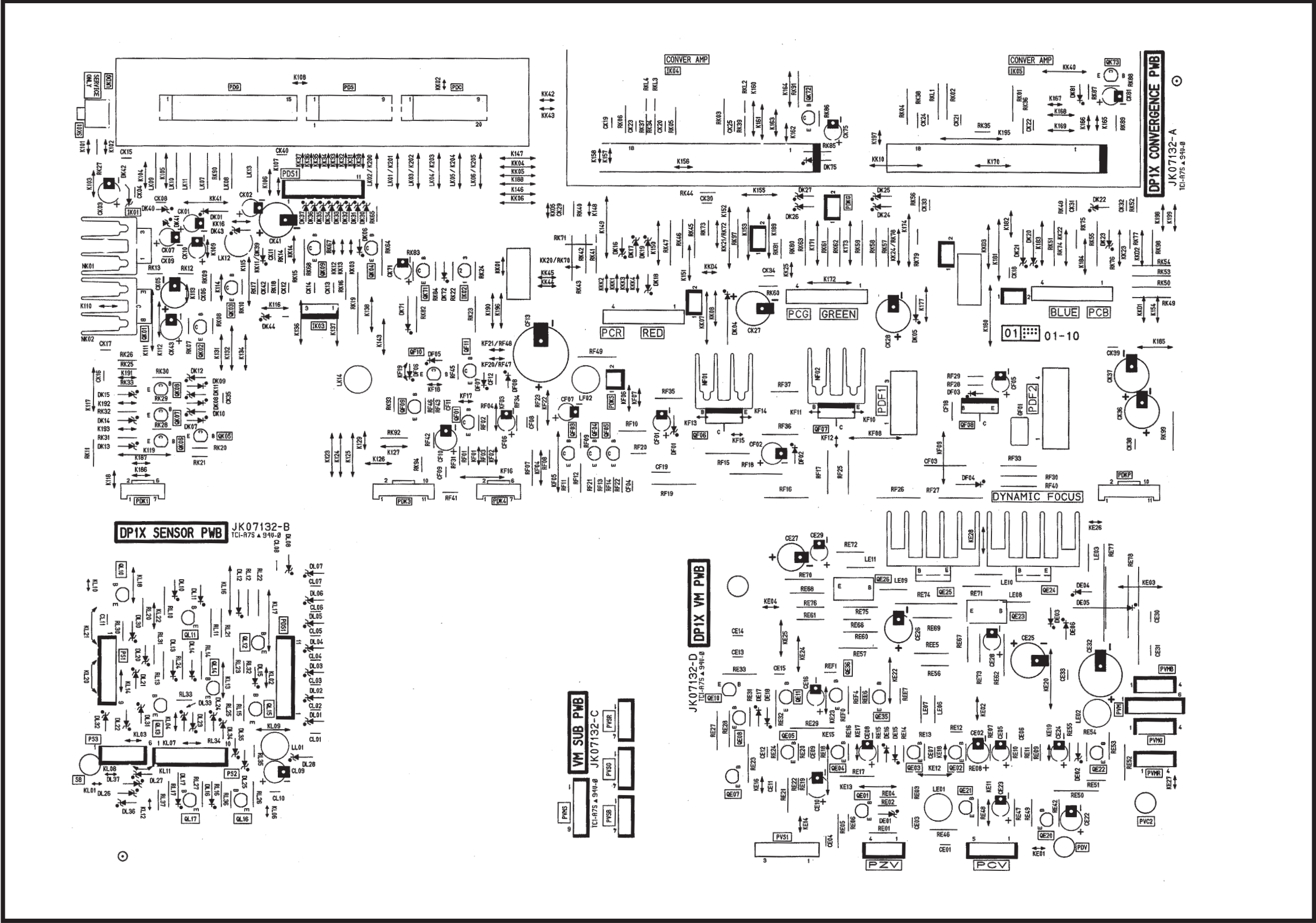


- All DC voltage to be measured with a tester (100k Ω /V). Voltage taken on a complex color bar signal including a standard color bar signal.
- Since this is a basic circuit diagram, the value of the parts is subject to be altered for improvement.

SENSOR DP15K/DP15J/DP15H

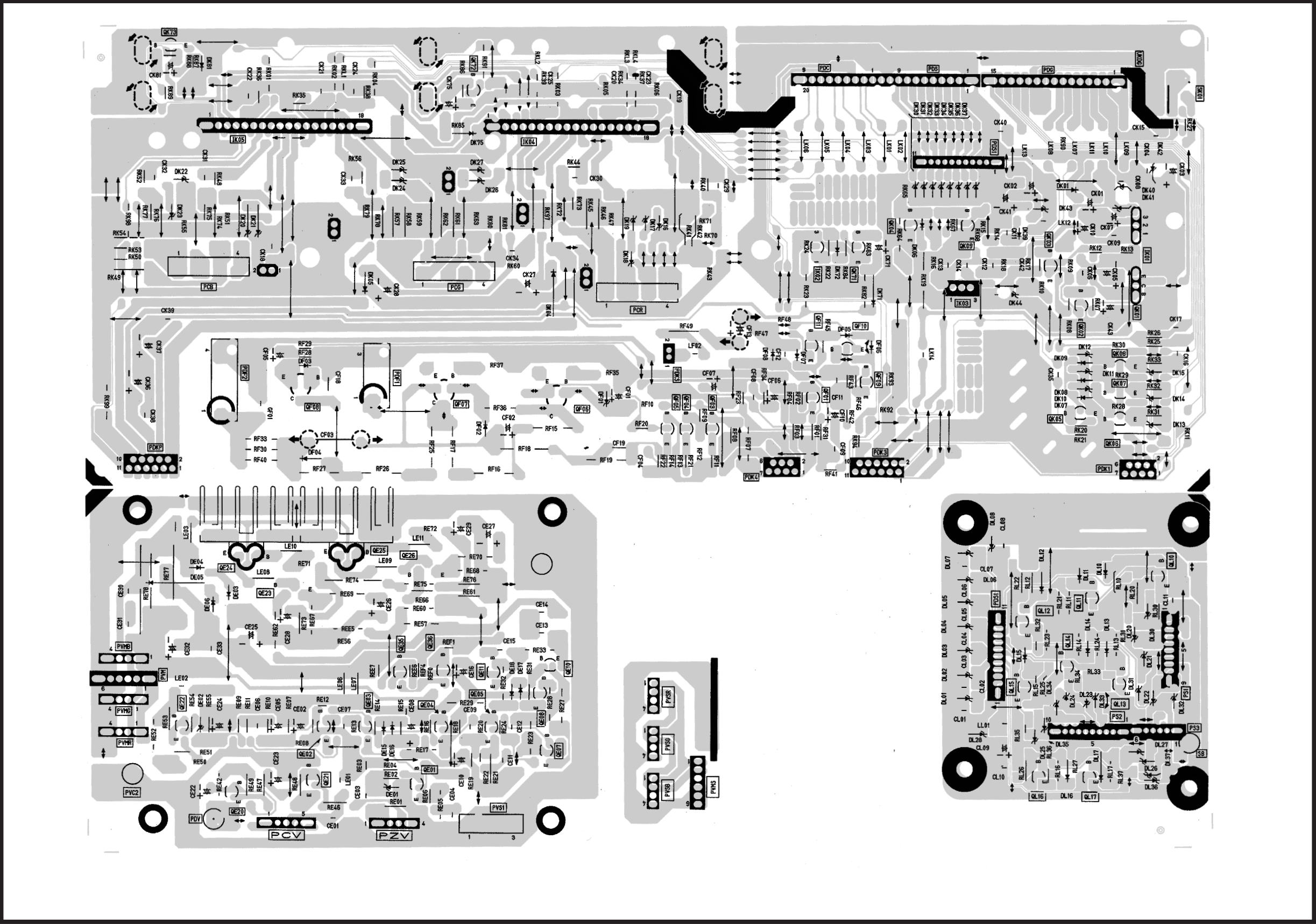
PRINTED CIRCUIT BOARD
COMPONENT SIDE

DP1X CONVERGENCE / DP1X SENSOR PWB / DP1X VM PWB



PRINTED CIRCUIT BOARD
PATTERN SIDE

DP1X CONVERGENCE / DP1X SENSOR PWB / DP1X VM PWB



REPLACEMENT PARTS LIST

PRODUCT SERVICE NOTE: Components marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

ABBREVIATIONS

Capacitors:

AL: Aluminum Electrolytic
CD: Ceramic Disc
EL: Electrolytic
PF: Polyester Film
PP: Polypropylene
PL: Plastic
TA: Tantalum
PR: Paper
TM: Trimmer
MC: Mylar

Resistors:

CF: Carbon Film
CC: Carbon Composition
MF: Metal Oxide
VR: Variable Resistor
WW: Wire Wound
FR: Fuse Resistor
MG: Metal Grazed

Semiconductors:

TR: Transistor
DI: Diode
ZD: Zener Diode
VA: Varistor
TH: Thermistor
IC: Integrated Circuit

Note: The chassis for DP15H/DP15J/DP15K are the same as the chassis for DP15 except the following:

1. Convergence Focus PWB - Please refer to the Parts List below.
2. DCU Parameter - Please refer to this Service Manual.
3. Signal PWB - Add Diode D007 to change OSD - Please refer to the Parts List below.
4. Cabinet - Add 4 more sensor holder for a total of 8 to convert to Magic Focus.

Please refer to Service Manual PA No. 0146 for other information not included in this Service Manual.

SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
		CAPACITORS	CK01	0800335R	CAP.-ELECTRO. 220UF-M(SMG) 16V
CE01	0880044R	CAP.-POLYESTER 0.01UF-KEB 50V	CK03	0800326R	CAP.-ELECTRO. 100UF-M 16V
CE02	0800321R	CAP.-ELECTRO. 47UF-M 50V	CK04	0880194R	CAP.-POLYESTER 0.1UF-J 50V
CE03	0880194R	CAP.-POLYESTER 0.1UF-J 50V	CK05	0800353R	CAP.-ELECTRO.470UF-M 16V
CE04	0890066R	CAP.CERAMIC 27PF-J 50V	CK06	0880194R	CAP.-POLYESTER 0.1UF-J 50V
CE05	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CK07	0800326R	CAP.-ELECTRO. 100UF-M 16V
CE06	0880044R	CAP.-POLYESTER 0.01UF-KEB 50V	CK08	0880194R	CAP.-POLYESTER 0.1UF-J 50V
CE07	0890061R	CAP.-CERAMIC 10PF- 50V	CK09	0880194R	CAP.-POLYESTER 0.1UF-J 50V
CE09	0880194R	CAP.-POLYESTER 0.1UF-J 50V	CK10	0800326R	CAP.-ELECTRO. 100UF-M 16V
CE10	0800321R	CAP.-ELECTRO. 47UF-M 50V	CK11	0880035R	CAP.-POLY 2200PF-50V
CE13	0244541F	CAPACITOR-CERAMIC 0.01MF-K B 500V	CK12	0890076R	CAP.CERAMIC 150PF-K 50V
CE14	0244541F	CAPACITOR-CERAMIC 0.01MF-K B 500V	CK15	0880031R	CAP.-POLY.1000PF-K 50V
CE15	0880039R	CAP.-POLYESTER 0.0047UF-KEB50V	CK18	0880044R	CAP.-POLYESTER 0.01UF-KEB 50V
CE16	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CK19	0880044R	CAP.-POLYESTER 0.01UF-KEB 50V
CE24	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CK20	0890076R	CAP.CERAMIC 150PF-K 50V
CE25	AL00027R	CAP.-ELECTRO. 4.7UF-M 250V	CK21	0890076R	CAP.CERAMIC 150PF-K 50V
CE26	AL01166R	CAP.ELECTROLYTIC 100UF-M(YXF)50V	CK22	0890083R	CAP.-CERAMIC 470PF-K 50V
CE27	AL01166R	CAP.ELECTROLYTIC 100UF-M(YXF)50V	CK23	0890076R	CAP.CERAMIC 150PF-K 50V
CE28	0800303R	CAP.-ELECTRO. 22UF-M 50V	CK24	0890076R	CAP.CERAMIC 150PF-K 50V
CE29	0800303R	CAP.-ELECTRO. 22UF-M 50V	CK25	0890076R	CAP.CERAMIC 150PF-K 50V
CE30	0247848R	CAP.-CERAMIC 56PF-J SL 500V	CK27	0800356N	CAP.-ELECTRO. 470UF-M 50V
CE31	0247848R	CAP.-CERAMIC 56PF-J SL 500V	CK28	0800356N	CAP.-ELECTRO. 470UF-M 50V
CE32	AL00032R	CAP.-ELECTRO. 47UF-M 250V	CK29	0890076R	CAP.CERAMIC 150PF-K 50V
CE33	0244541F	CAPACITOR-CERAMIC 0.01MF-K B 500V	CK30	0890076R	CAP.CERAMIC 150PF-K 50V
CF01	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CK31	0890076R	CAP.CERAMIC 150PF-K 50V
CF02	0255520R	CAP.-ELECTRO 0.47UF 250V(KME)	CK32	0890076R	CAP.CERAMIC 150PF-K 50V
CF03	AN01631F	1000PF1500VMETALLIZ POLYPROPYLENE FILM CAPA	CK33	0890076R	CAP.CERAMIC 150PF-K 50V
CF04	0880034R	CAP.-POLYESTER 0.0018UF-KEB50V	CK34	0890076R	CAP.CERAMIC 150PF-K 50V
CF05	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CK36	0800355N	CAP.ELECTRO. 470UF-M 35V
CF06	0800294R	CAP.-ELECTRO. 10UF-M(SMG) 50V	CK37	0800355N	CAP.ELECTRO. 470UF-M 35V
CF18	0245158	CAPACITOT CERAMIC 68PF/2KV	CK43	0880044R	CAP.-POLYESTER 0.01UF-KEB 50V
CF19	0245156	CAPACITOT CERAMIC 22PF/2KV	CK51	0890084R	CAP.-CERAMIC 560PF-K 50V
			CL01	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
CL02	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DK36	2331815M	ZENER HZ7-B2
CL03	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DK37	2331815M	ZENER HZ7-B2
CL04	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DK39	CH02021M	DIODE 1SS133 T-72
CL05	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DK41	2331815M	ZENER HZ7-B2
CL06	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DK42	2331815M	ZENER HZ7-B2
CL07	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DL01	2331815M	ZENER HZ7-B2
CL08	0880053R	CAP.-POLYESTER 0.047UF-KEB 50V	DL02	2331815M	ZENER HZ7-B2
CL09	0800326R	CAP.-ELECTRO. 100UF-M 16V	DL03	2331815M	ZENER HZ7-B2
CL10	0880194R	CAP.-POLYESTER 0.1UF-J 50V	DL04	2331815M	ZENER HZ7-B2
		DIODES	DL05	2331815M	ZENER HZ7-B2
D007	CH02021M	DIODE 1SS133 T-72	DL06	2331815M	ZENER HZ7-B2
DE01	2331849M	ZENER HZ12C3 (TA) SI 500MW	DL07	2331815M	ZENER HZ7-B2
DE02	2335042M	ZENER HZ-22 (2L TP) SI 200MA 400MW	DL08	2331815M	ZENER HZ7-B2
DE03	CH02001M	DIODE 1SR139-400	DL10	CH02021M	DIODE 1SS133 T-72
DE04	CH02001M	DIODE 1SR139-400	DL11	CH02021M	DIODE 1SS133 T-72
DE05	CH02001M	DIODE 1SR139-400	DL12	CH02021M	DIODE 1SS133 T-72
DE06	CH02001M	DIODE 1SR139-400	DL13	CH02021M	DIODE 1SS133 T-72
DE17	CH02021M	DIODE 1SS133 T-72	DL14	CH02021M	DIODE 1SS133 T-72
DE18	CH02021M	DIODE 1SS133 T-72	DL15	CH02021M	DIODE 1SS133 T-72
DF01	CH02021M	DIODE 1SS133 T-72	DL16	CH02021M	DIODE 1SS133 T-72
DF02	CH02021M	DIODE 1SS133 T-72	DL17	CH02021M	DIODE 1SS133 T-72
DF03	CH02021M	DIODE 1SS133 T-72	DL20	2331815M	ZENER HZ7-B2
DF04	2338531M	DIODE EG-01C (V) SI 0.5A	DL21	2331815M	ZENER HZ7-B2
DK01	CH02301M	DIODE D2S4M (2A-40V)	DL22	2331815M	ZENER HZ7-B2
DK04	CH02011M	DIODE 1SR153-400	DL23	2331815M	ZENER HZ7-B2
DK05	CH02011M	DIODE 1SR153-400	DL24	2331815M	ZENER HZ7-B2
DK16	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	DL25	2331815M	ZENER HZ7-B2
DK16	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	DL26	2331815M	ZENER HZ7-B2
DK17	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	DL27	2331815M	ZENER HZ7-B2
DK17	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	DL28	2331824M	ZENER HZ9B1 TA
DK18	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	DL30	2331824M	ZENER HZ9B1 TA
DK18	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	DL31	2331824M	ZENER HZ9B1 TA
DK19	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	DL32	2331824M	ZENER HZ9B1 TA
DK19	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	DL33	2331824M	ZENER HZ9B1 TA
DK20	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	DL34	2331824M	ZENER HZ9B1 TA
DK20	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	DL35	2331824M	ZENER HZ9B1 TA
DK21	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	DL36	2331824M	ZENER HZ9B1 TA
DK21	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	DL37	2331824M	ZENER HZ9B1 TA
DK22	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX			IC's
DK22	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	IK01	CP07611	ANALOG MONOLITHIC IC (NJM7805FA
DK23	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	IK02	CP01631R	ICL-PST9142
DK23	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	IK04	CZ00431	HYBRID IC (STK392-110) 53SDX/FDX
DK24	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	IK04	CZ00432	HYBRID IC (STK392-120) 43FDX
DK24	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	IK05	CZ00431	HYBRID IC (STK392-110) 53SDX/FDX
DK25	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	IK05	CZ00432	HYBRID IC (STK392-120) 43FDX
DK25	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX			COILS
DK26	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	LE01	2125811F	FILT.COIL(LHL08 100UH)
DK26	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	LE02	2125811F	FILT.COIL(LHL08 100UH)
DK27	2334324M	Z.D. RD36E TAPE (B3) SI 500MW 36V 53SDX/FDX	LE03	BH01341M	COIL FERRITE BEADS 0.8UH
DK27	2334334M	ZENER RD39E (B3 T2 TP TA) 43FDX/53SDX	LK07	BH01341M	COIL FERRITE BEADS 0.8UH
DK30	2331815M	ZENER HZ7-B2	LK08	BH01341M	COIL FERRITE BEADS 0.8UH
DK31	2331815M	ZENER HZ7-B2	LK09	BH01342M	COIL FERRITE BEADS 2.3UH
DK32	2331815M	ZENER HZ7-B2	LK10	BH01342M	COIL FERRITE BEADS 2.3UH
DK33	2331815M	ZENER HZ7-B2	LK11	BH01342M	COIL FERRITE BEADS 2.3UH
DK34	2331815M	ZENER HZ7-B2	LK13	BH01342M	COIL FERRITE BEADS 2.3UH
DK35	2331815M	ZENER HZ7-B2	LK14	2125808N	FILT.COIL(LHL08 68UH)

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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
LL01	2125811F	FILT.COIL(LHL08 100UH)	RE20	0700024M	RES.-CARBON FLM 1/16W 56-J
		TRANSISTORS	RE21	AT03857M	100OHM 1/2W RDS50 CARBON FILM RESISTOR
QE01	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE23	AT03869M	820OHM 1/2W RDS50 CARBON FILM RESISTOR
QE02	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE24	0700027M	RES.-CARBON FLM 1/16W 100-JB
QE03	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE27	0113750M	RES.-CARBON FLM 1/2W 1K-JB
QE04	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE28	0700017M	RES.-CARBON FLM 1/16W 18-J
QE05	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE29	0113750M	RES.-CARBON FLM 1/2W 1K-JB
QE07	CF01881R	TRS. 2SA1283 E	RE31	0700014M	RES.-CARBON FLM 1/16W 10-J
QE08	CF01871R	TRS. 2SC3243 E	RE32	0700014M	RES.-CARBON FLM 1/16W 10-J
QE10	CF01871R	TRS. 2SC3243 E	RE33	AT03848M	22.0OHM 1/2W RDS50 CARBON FILM RESISTOR
QE11	CF01881R	TRS. 2SA1283 E	RE50	AT03419S	METAL OX. 470 OHM 2W
QE22	2326821R	TRANSISTOR 2SA1371 (E/F)	RE51	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
QE23	2315381	TRS. 2SA1837	RE52	0100021M	RES.-CARBON FLM 1/8W 15-JB
QE24	2315381	TRS. 2SA1837	RE55	0700067M	RES.-CARBON FLM 1/16W 100K-JB
QE25	2315391	TRS. 2SC4793	RE56	0100065M	RES.-CARBON FLM 1/8W 1K-JB
QE26	2315391	TRS. 2SC4793	RE57	0113791M	RES.-CARBON FLM 1/2W 47K-JB
QE35	2326811R	TRANSISTOR 2SC3468 (E/F)	RE60	AT03897M	100KOHM 1/2W RDS50 CARBON FILM RESISTOR
QE36	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE61	0100065M	RES.-CARBON FLM 1/8W 1K-JB
QF03	2320663M	TRS. 2SC1213A (C)	RE62	0100033M	RES.-CARBON FLM 1/8W 47-JB
QF04	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	RE66	0100033M	RES.-CARBON FLM 1/8W 47-JB
QF05	2320663M	TRS. 2SC1213A (C)	RE67	AT03853M	47.0OHM 1/2W RDS50 CARBON FILM RESISTOR
QF06	CF00821F	TRS. 2SC4686A 1200V	RE68	AT03853M	47.0OHM 1/2W RDS50 CARBON FILM RESISTOR
QF07	CF00821F	TRS. 2SC4686A 1200V	RE69	0113698M	RES.-CARBON FLM 1/2W 8.2-J
QF08	CF00821F	TRS. 2SC4686A 1200V	RE70	0113698M	RES.-CARBON FLM 1/2W 8.2-J
QK01	2312171	TRS. 2SC3852	RE71	0100041M	RES.-CARBON FLM 1/8W 100-JB
QK02	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	RE72	0100041M	RES.-CARBON FLM 1/8W 100-JB
QK03	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	RE73	0100095M	RES.-CARBON FLM 1/8W 18K-JB
QK06	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE74	AT03894M	56KOHM 1/2W RDS50 CARBON FILM RESISTOR
QK07	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE75	AT03894M	56KOHM 1/2W RDS50 CARBON FILM RESISTOR
QK08	2320591M	TRS. 2SC458 (B TZ/C TZ) SI 230MHZ200MW	RE76	0100095M	RES.-CARBON FLM 1/8W 18K-JB
QL10	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	RE77	AT03571S	METAL OX. 220OHM 3W
QL11	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	RE78	AT03571S	METAL OX. 220OHM 3W
QL12	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	REE5	AT03897M	100KOHM 1/2W RDS50 CARBON FILM RESISTOR
QL13	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	REE6	0700065M	RES.-CARBON FLM 1/16W 68K-JB
QL14	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	REE7	0700064M	RES.-CARBON FLM 1/16W 56K-JB
QL15	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	REF0	0100113M	RES.-CARBON FLM 1/8W 100K-JB
QL16	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	REF1	0700055M	RES.-CARBON FLM 1/16W 12K-JB
QL17	2320637M	TRS. 2SA673 (C 26TZ/D 26TZ) SI 80MHZ 400MW	REF4	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
		RESISTORS	RF07	0700067M	RES.-CARBON FLM 1/16W 100K-JB
RE01	0100065M	RES.-CARBON FLM 1/8W 1K-JB	RF08	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RE02	0700055M	RES.-CARBON FLM 1/16W 12K-JB	RF09	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RE03	0700066M	RES.-CARBON FLM 1/16W 82K-JB	RF10	AT03857M	100OHM 1/2W RDS50 CARBON FILM RESISTOR
RE04	0700024M	RES.-CARBON FLM 1/16W 56-J	RF11	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RE05	AT03866M	470OHM 1/2W RDS50 CARBON FILM RESISTOR	RF13	0700056M	RES.-CARBON FLM 1/16W 15K-JB
RE06	0700018M	RES.-CARBON FLM 1/16W 22-J	RF14	0700025M	RES.-CARBON FLM 1/16W 68-J
RE07	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RF15	AT03654M	RES.MTL GRAZD FLM 1/2W 180K
RE08	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RF16	AT03654M	RES.MTL GRAZD FLM 1/2W 180K
RE09	0700055M	RES.-CARBON FLM 1/16W 12K-JB	RF17	AT03654M	RES.MTL GRAZD FLM 1/2W 180K
RE10	0700055M	RES.-CARBON FLM 1/16W 12K-JB	RF18	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RE11	0700027M	RES.-CARBON FLM 1/16W 100-JB	RF19	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RE12	0700024M	RES.-CARBON FLM 1/16W 56-J	RF20	0700025M	RES.-CARBON FLM 1/16W 68-J
RE13	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RF21	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB
RE16	0700027M	RES.-CARBON FLM 1/16W 100-JB	RF22	0187096M	RES.-CARBON FLM 1/16W 20K-JB
RE17	AT03876M	2.7OHM 1/2W RDS50 CARBON FILM RESISTOR	RF23	0700063M	RES.-CARBON FLM 1/16W 47K-JB
RE18	0700065M	RES.-CARBON FLM 1/16W 68K-JB	RF25	AT03662M	RES.MTL GRAZD FLM 1/2W 560K
RE19	0700052M	RES.-CARBON FLM 1/16W 6.8K-JB	RF26	AT03662M	RES.MTL GRAZD FLM 1/2W 560K

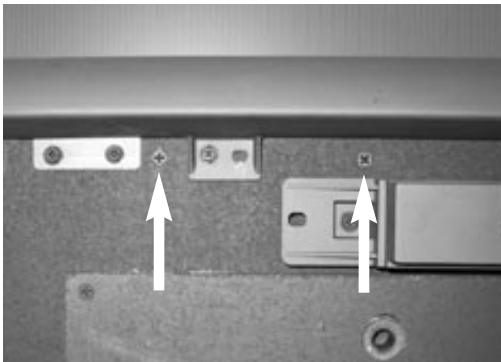
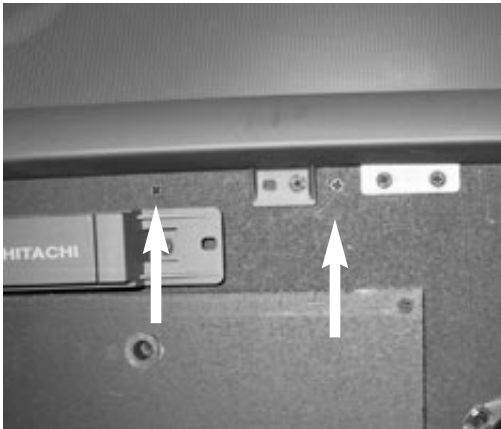

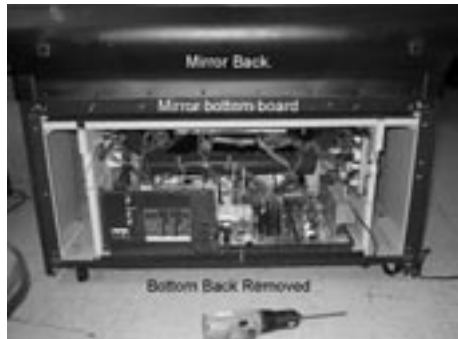
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SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
RF27	AT03661M	RES.MTL GRAZD FLM 1/2W 470K	RK54	AT03193S	1.5 OHM 1W, (43FDX15B, 43FDX20B)
RF28	0700059M	RES.-CARBON FLM 1/16W 27K-JB	RK54	AT03191S	1.2 OHM 1W, (53FDX20B, 53SDX20B, 53SDX20BB)
RF29	0700049M	RES.-CARBON FLM 1/16W 4.7K-JB	RK55	AT03406S	METAL OX. 150OHM 2W
RF30	AT03892M	39KOHM 1/2W RDS50 CARBON FILM RESISTOR	RK56	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
RF33	AT03892M	39KOHM 1/2W RDS50 CARBON FILM RESISTOR	RK58	AT03206S	4.7 OHM 1W, (ALL MODELS)
RF34	0700045M	RES.-CARBON FLM 1/16W 2.2K-JB	RK59	AT03411S	METAL OX. 220OHM 2W
RF35	AT03911M	1MOHM 1/2W RDS50 CARBON FILM RESISTOR	RK60	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB
RF36	AT03857M	100OHM 1/2W RDS50 CARBON FILM RESISTOR	RK62	AT03197S	2.2 OHM 1W, (43FDX15B, 43FDX20B)
RF37	AT03911M	1MOHM 1/2W RDS50 CARBON FILM RESISTOR	RK62	AT03195S	1.8 OHM 1W, (53FDX20B, 53SDX20B, 53SDX20BB)
RK01	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK63	AT03406S	METAL OX. 150OHM 2W
RK02	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK64	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK03	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK65	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK04	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK90	0700054M	RES.-CARBON FLM 1/16W 10K-JB
RK05	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK92	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB
RK06	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK97	AT03193S	METAL OX. 1.5OHM 1W
RK07	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RK99	0188097M	RES.-CARBON FLM 1/2W 3.3-J
RK08	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RL10	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK09	0100057M	RES.-CARBON FLM 1/8W 470-JB	RL11	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK10	0700042M	RES.-CARBON FLM 1/16W 1.2K-JB	RL12	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK11	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL13	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK12	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL14	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK13	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL15	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK17	0700046M	RES.-CARBON FLM 1/16W 2.7K-JB	RL16	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK18	0700048M	RES.-CARBON FLM 1/16W 3.9K-JB	RL17	0100129M	RES.-CARBON FLM 1/8W 470K-JB
RK22	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL20	0100129M	RES.-CARBON FLM 1/8W 470K-JB 43FDX
RK23	0100085M	RES.-CARBON FLM 1/8W 6.8K-JB	RL20	0100133M	RES.-CARBON FLM 1/8W 680K-JB SDX
RK24	0700043M	RES.-CARBON FLM 1/16W 1.5K-JB	RL21	0100117M	RES.-CARBON FLM 1/8W 150K-JB 43FDX
RK25	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL21	0100119M	RES.-CARBON FLM 1/8W 180K-JB 53SDX/FDX
RK26	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL22	0100131M	RES.-CARBON FLM 1/8W 560K-JB 43FDX
RK27	0700054M	RES.-CARBON FLM 1/16W 10K-JB	RL22	0100133M	RES.-CARBON FLM 1/8W 680K-JB 53SDX/FDX
RK28	0700027M	RES.-CARBON FLM 1/16W 100-JB	RL23	0100123M	RES.-CARBON FLM 1/8W 270K-JB
RK29	0700027M	RES.-CARBON FLM 1/16W 100-JB	RL23	0100125M	RES.-CARBON FLM 1/8W 330K-JB 53FDX
RK30	0700027M	RES.-CARBON FLM 1/16W 100-JB	RL24	0100131M	RES.-CARBON FLM 1/8W 560K-JB 43FDX
RK31	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL24	0100133M	RES.-CARBON FLM 1/8W 680K-JB 53SDX/FDX
RK32	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL25	0100117M	RES.-CARBON FLM 1/8W 150K-JB 43FDX
RK33	0700041M	RES.-CARBON FLM 1/16W 1.0K-JB	RL25	0100119M	RES.-CARBON FLM 1/8W 180K-JB 53SDX/FDX
RK34	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL26	0100131M	RES.-CARBON FLM 1/8W 560K-JB 43FDX
RK35	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL26	0100133M	RES.-CARBON FLM 1/8W 680K-JB 53SDX/FDX
RK36	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL27	0100123M	RES.-CARBON FLM 1/8W 270K-JB
RK37	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL27	0100125M	RES.-CARBON FLM 1/8W 330K-JB 53FDX
RK38	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL30	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK39	0700063M	RES.-CARBON FLM 1/16W 47K-JB	RL31	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK40	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RL32	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK42	AT03202S	3.3 OHM 1W, (43FDX15B, 43FDX20B)	RL33	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK42	AT03204S	3.9 OHM 1W, (53FDX20B, 53SDX20B, 53SDX20BB)	RL34	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK43	AT03411S	METAL OX. 220OHM 2W	RL35	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK44	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	RL36	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK46	AT03193S	1.5 OHM 1W, (43FDX15B, 43FDX20B)	RL37	0700027M	RES.-CARBON FLM 1/16W 100-JB
RK46	AT03193S	1.5 OHM 1W, (53FDX20B, 53SDX20B, 53SDX20BB)			Cabinet Parts
RK47	AT03406S	METAL OX. 150OHM 2W	Symbol	Part No.	Part Description
RK48	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	N203B	KQ00431K	Blue Lens Assy 53SDX20BB
RK50	AT03199S	2.7 OHM 1W, (43FDX15B, 43FDX20B)	N203G	KQ00434K	Green Lens Assy 53SDX20BB
RK50	AT03199S	2.7 OHM 1W, (53FDX20B, 53SDX20B, 53SDX20BB)	N203R	KQ00435K	Red Lens Assy 53SDX20BB
RK51	AT03411S	METAL OX. 220OHM 2W	N200	KQ00811	Lens Assy (RGB) 43FDX15 20B
RK52	0700047M	RES.-CARBON FLM 1/16W 3.3K-JB	N200	KQ00811	Lens Assy (RGB) 53FDX20B
RK54			N203B	KQ02221K	Blue Lens Assy 53SDX20B

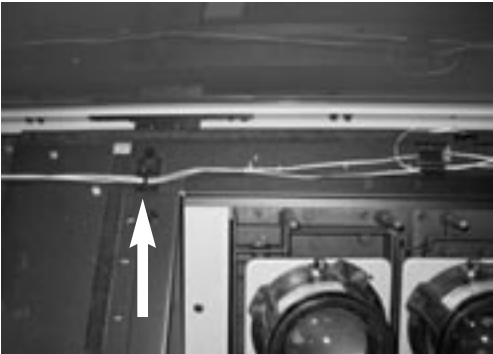
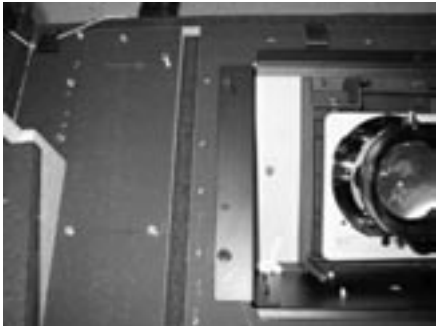


PRODUCT SERVICE NOTE: Components marked with a  have special characteristics important to safety. Before replacing any of these components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.





SYMBOL NO.	PART NO.	PART DESCRIPTION	SYMBOL NO.	PART NO.	PART DESCRIPTION
N203G	KQ02222K	Green Lens Assy 53SDX20B			
N203R	KQ02223K	Red Lens Assy 53SDX20B			
#	KR01162	Screen Assy 53SDX20BB			
#	KR02531	Screen Assy 43FDX20B			
#	KR02532	Screen Assy 53FDX20B			
#	KR02533	Screen Assy 53SDX20B			
#	KR02534	Screen Assy 43FDX15B			
#20	KS02024	43" First Surface Mirror			
#83	KS02028	53" First Surface Mirror			
#260	NJ01471	Sensor Holder Assy 53"			
#550	NJ05481	Catch Sensor Holder Assy 43"			
#	NT02273	Screen Frame Assy 53FDX20B			
#	NT02283	Screen Frame Assy 43FDX15B			
#	NT02283	Screen Frame Assy 43FDX20B			
#	NT02313	Screen Frame Assy 53SDX20B			
#	NT02314	Screen Frame Assy 53SDX20BB			
#299	PH07002	53" Bottom Rail			
#451	PH08305	43" Speaker Grill			
#415	PH08913	53" Speaker Grill			
#10	QD08992	43" Back Cover			
#165	QJ00673	43" Foot (x 4)			
#	UE20821	Red PRT Assy 53SDX20BB			
#	UE20822	Green PRT Assy 53SDX20BB			
#	UE20823	Blue PRT Assy 53SDX20BB			
#	UE08744	Red PRT Assy 53SDX20B			
#	UE08745	Green PRT Assy 53SDX20B			
#	UE08756	Blue PRT Assy 53SDX20B			
#	UE20234	Red PRT Assy 53FDX20B			
#	UE20235	Green PRT Assy 53FDX20B			
#	UE20236	Blue PRT Assy 53FDX20B			
#	UE20311	Red PRT Assy 43FDX15 20B			
#	UE20312	Green PRT Assy 43FDX15 20B			
#	UE20313	Blue PRT Assy 43FDX15 20B			
		Miscellaneous			
PS3	2959055	6P Connector			
#	BY01552	43" Yoke Assy (R, G, B)			
#	BY01661	53" Yoke Assy (R, G, B)			
GF01	CJ00072R	Spark Gap 2.5 KV			
UKDG	CS00452	DCU Assy			
PDK1	ED01491U	7P Plug Pin			
PDK4	ED01491U	7P Plug Pin			
PDK3	ED01492U	Connector			
PDKP	ED01492U	Connector			
PDC	ED03205	9P 2.5 mm Connector			
PDS	ED03205	9P 2.5 mm Connector			
PDG	ED03212	15P 2.5 mm Connector			
SK01	FE10332R	DCAM Switch			
		Accessories			
	Part No.	Description			
#	H312251	43" Full Mode Screen Jig			
#	H312252	43" V Squeeze Screen Jig			
#	H312253	53" Full Model Screen Jig			
#	H312254	53" V Squeeze Screen Jig			
E301	HL01832	CLU4322UG Remote Control			
N201	QR52481	Owners' guide			

STEP	INSTRUCTIONS	IMAGE
1	Remove the Front Speaker Grille.	
2	<p>Pull the Speaker Grille off by placing your hand behind the outside corners and pulling straight out.</p> <p>The Speaker Grille is held in place by Velcro.</p>	
3	<p>With the Front Speaker Grille removed, the screws necessary to remove the light box are visible.</p> <p>Look underneath the Front Screen Frame.</p> <p>The image shows the screws on the left side.</p>	
4	This image shows the screws on the right side.	

STEP	INSTRUCTIONS	IMAGE
5	Remove the 2 screws that are noted by the arrows on the left side.	
6	Do the same thing for the Right side.	
7	<p>Now move to the back of the PTV.</p> <p>The back cover and the lower rear board must be removed.</p> <p>To remove the lower rear board, remove the 15 screws.</p>	
8	This image shows the back of the PTV with the lower rear board removed.	





STEP	INSTRUCTIONS	IMAGE
9	<p>To remove the Back Cover, remove the 18 screws all around it.</p> <p>Use extreme caution here, as the mirror is fragile and when the last screw is removed, the back can fall down and damage the mirror. Use additional help and allow them to hold the back cover while removing the last screw.</p>	
10	<p>After taking off the Back Cover, the cabinet light cavity will be exposed.</p> <p>Take note of the Sensor board located on the top right corner.</p>	
11	<p>Remove the blue (PDS1) Sensor Interface connector.</p>	
12	<p>Undress wirings from 3 wire retainers.</p> <p>1 is located below the number 5 sensor and 1 to the right of it.</p> <p>Press down on the plastic tab and pull the wires out.</p>	

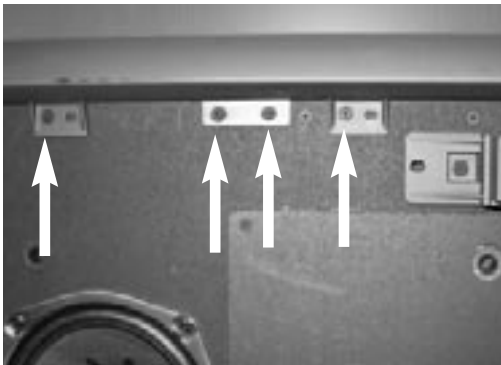
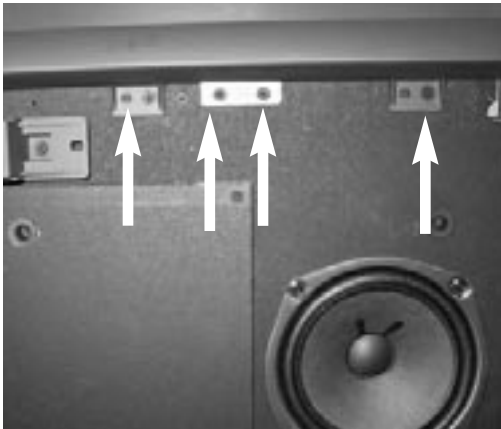


STEP	INSTRUCTIONS	IMAGE
13	Do the same on the retainer to the left of Sensor 5.	
14	Remove 4 screws. (2 screws on the left/ 2 screws on the right of the CRT Lens Assembly.)	
15	To remove the Back cover support board, remove the 4 screws (2 on each side).	
16	This shows the 2 screws on the right side.	


STEP	INSTRUCTIONS	IMAGE
17	To remove the Front Control Panel, remove the 2 screws (1 each on both sides).	
18	Remove the 2 screws that hold the chassis to the cabinet.	
19	Lift the Light Box in the center back and slide backwards until the Light Box is out.	
20	<p>Reattach the Control Panel to the light box to allow operation outside of the cabinet.</p> <p>The Light Box is now ready for easy transport to a designated service and repair facility.</p>	

STEP	INSTRUCTIONS	IMAGE
21	<p>While the Light Box is being transported or serviced, be very careful not to damage the CRT PWB's. Also use caution in handling the LENS area to avoid damage and scratches.</p>	





Disassembly Instructions for Screen Frame Assemblies
Models: 53FDX20B, 53SDX20B, 53SDX20BB





STEP	INSTRUCTIONS	IMAGE
1	Remove the Front Speaker Grille.	
2	<p>Pull the Speaker Grille off by placing your hand behind the outside corners and pulling straight out.</p> <p>The Speaker Grille is held in place by Velcro.</p>	
3	<p>With the Front Speaker Grille removed, the screws necessary to remove the Screen Frame are visible.</p> <p>Look underneath the Front Screen Frame.</p> <p>The image shows the screws on the left side.</p>	
4	This image shows the screws on the right side.	

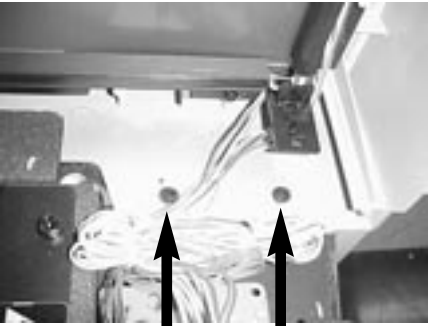
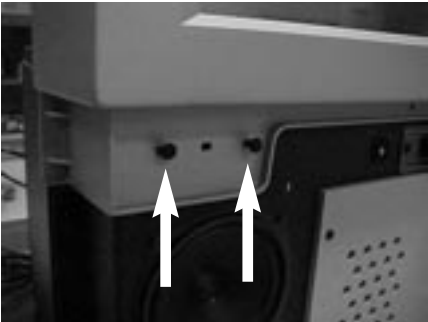

STEP	INSTRUCTIONS	IMAGE
5	For the Screen Frame removal, remove the 4 screws shown on the image on the right. (Left side of Control Panel.)	
6	Do the same thing for the Right side. (Right side of Control Panel.)	
7	Grab the Screen Frame on the lower Left or Right corner firmly. With a quick jerk, pull the corner straight out towards you.	
8	Do the same thing for the other side and pull the Screen Frame assembly out "no more than 4 in."	

STEP	INSTRUCTIONS	IMAGE
9	<p>With the bottom pulled back no more than 4 in., lift the Screen Frame assembly straight up.</p> <p>This will unhook the top of the screen Frame from the cabinet.</p> <p>Carefully store Screen Frame assembly.</p>	 A black and white photograph showing a person's arm and hand lifting a vertical rectangular screen frame assembly from a dark cabinet. The person is wearing a light-colored long-sleeved shirt. The background shows a workshop or storage area with various items on shelves.

Models: 43FDX20B, 43FDX15B

STEP	INSTRUCTIONS	IMAGE
1	The Front Speaker Grille needs to be removed.	
2	<p>Remove 4 Screws located on the back sides of the Speaker Grille (2 on each side).</p> <p>The image on the right shows the 2 screws on the right back side of the Speaker Grille.</p>	
3	The image on the right shows the Speaker Grille removed.	
4	The Lower Rear board needs to be removed. Remove 16 screws all around the Lower Rear Board.	

STEP	INSTRUCTIONS	IMAGE
5	<p>Image on the right shows Lower Rear Board removed.</p> <p>Next to be removed is the Back Cover which is partially shown in this image.</p>	
6	<p>Remove the 18 screws all around the Back Cover.</p> <p>The image to the right shows the back of the left side of the Back Cover.</p> <p>Again, use extreme caution because the mirror is attached to the Back Cover.</p>	
7	<p>This image shows the back of the the PTV with the Back Cover and lower Rear Board removed.</p>	
8	<p>Look for the Sensor Board located on the top right corner. Remove the Sensor Interface connectors.</p>	

STEP	INSTRUCTIONS	IMAGE
9	<p>Remove the 4 screws (2 on each corner) that partially holds the screen frame assembly.</p> <p>this image shows the 2 screws on the right corner near the sensor board.</p>	
10	<p>Locate and remove the last 4 screws on the lower left and right corner in the front of the Screen Frame. (2 on each corner.)</p> <p>The image shows the left corner.</p> <p>Please note that these screws are the last ones that are holding the Screen Frame. Grab the Screen Frame on both corners and slide out towards you.</p>	
11	<p>This image shows the PTV after you have removed the Screen Frame assembly.</p>	

53FDX20B / DP15H

CS00452	DCU ASSY
CS00553	FLEX CONVERTER
JT22013	SIGNAL PWB
JT22023	TERMINAL PWB
JT22034	DEFLECTION PWB
JT22043	POWER PWB
JT22054	CONV FOCUS PWB
JT22063	CPT PWB
KR02532	SCREEN ASSEMBLY
UE08644	DP15H CHASSIS
UE20234	RED CRT
UE20235	GREEN CRT
UE20236	BLUE CRT
X480245	SURROUND PWB
X480261	CONTROL PWB

53SDX20B / DP15J

CS00452	DCU
CS00553	FLEX CONVERTER
JT23251	SIGNAL PWB
JT23261	TERMINAL PWB
JT23271	DEFLECTION PWB
JT23281	POWER PWB
JT23291	CONV FOCUS PWB
JT23301	CPT PWB
KR02533	SCREEN ASSEMBLY
UE08744	RED CRT
UE08745	GREEN CRT
UE08746	BLUE CRT
UE20561	DP15J CHASSIS
X480245	SURROUND PWB

53SDX20BB DP15J
(Does not have lightbox)

CS00452	DCU
CS00553	FLEX CONT
JT23251	SIGNAL PWB
JT23261	TERMINAL PWB
JT23271	DEFLECTION PWB
JT23281	POWER PWB
JT23291	CONV FOCUS PWB
JT23301	CPT PWB
KR01162	SCREEN ASSEMBLY
UE20821	RED CRT
UE20822	GREEN CRT
UE20823	BLUE CRT
UE20561	DP15J CHASSIS ASY
X480245	SURROUND PWB

43FDX15B / DP15K

CS00452	DCU
CS00493	FLEX CONVERTER (HC5613)
CS00553	FLEX CONVERTER (HC5613T)
JT23254	SIGNAL PWB
JT23264	TERMINAL PWB
JT23274	DEFLECTION PWB
JT23284	POWER PWB
JT23304	CPT PWB
KR02534	SCREEN ASSY
UE20311	RED CRT
UE20312	GREEN CRT
UE20313	BLUE CRT
UE20564	DP15K CHASSIS
X480246	SURROUND PWB

43FDX20B / DP15K

CS00452	DCU
CS00493	FLEX CONVERTER (HC5613)
CS00553	FLEX CONVERTER (HC5613T)
JT23254	SIGNAL PWB
JT23264	TERMINAL PWB
JT23274	DEFLECTION PWB
JT23284	POWER PWB
JT23304	CPT PWB
KR02531	SCREEN ASSY
UE20311	RED CRT
UE20312	GREEN CRT
UE20313	BLUE CRT
UE20564	DP15K CHASSIS
X480246	SURROUND PWB

HITACHI